RAILROAD GAZETTE

FRIDAY, APRIL 22, 1898.

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Contributions.

Torpedo Boats from the Lakes to the Ohio.

Pennsylvania Lines West of Pittsburgh,
Pittsburgh, Pa., April 18, 1898.

To the Editor of the Railroad Gazette:

Replying to the inquiry of "Reader" as to the transportation by rail of torpedo boats from the lake ship yards to the Ohio River, I would advise that under the conditions stated by your correspondent a torpedo boat of the dimensions of the Mackenzie (100 ft. long, 12 ft. 9 in. beam and 9 ft. deep) could be transported over the Pennsylvania lines from Chicago to Cincinnati, provided the construction of the boat is such as to allow it to be supported on two points of support without injury to itself.

We could not transport a boat of the Cushing type (138 ft. long, 14 ft. beam and 9 ft. deep) from Chicago to Cincinnati without reconstructing a number of our bridges, but we could take such a boat from Cleveland to the Ohio River at Rochester by erecting a temporary trestle around a through bridge, and by practically clearing the road for the shipment.

L. F. LOREE, General Manager.

Fullness and Clearness in Train Orders.

Port Jervis, N. Y., April 11, 1898.

To the Editor of the Railroad Gazette:

Will you kindly give your opinion in the following case: No. 7 west bound is due to leave A, the eastern terminal of a division, at 12.01 a. m.; No. 31, a slower train than No. 7, is due to leave A at 12.45 a. m., but No. 7 is three hours late getting in from adjoining division. The train dispatcher desires to move trains, including No. 31, ahead of No. 7 and, with that end in view, issues an order dated April 9, timed 11.45 p. m. (the time that the first one of the slow trains is really to go) and addressed to each of the trains concerned, that No. 7 will run three hours late from A to Z, the No. 7 referred to in the order being the No. 7 due to leave A at 12.01 a. m., April 10. Suppose the conductor and engineer of No. 31 objected to moving on this order, claiming that the Nos. 7 and 31 intended are both trains of the 10th, while the order if literally construed, can refer only to the same trains of the 9th, whose rights have lapsed by reason of their being over 12 hours due, if they have not gone. Would there be valid grounds for their raising this technical point? By publishing this with your reply you will oblige AN ENGINEER.

[A conductor or an engineman always has valid ground for raising a question when in doubt as to the meaning of an order. On the presentation of the question here given, the dispatcher would, of course, add the dates of the trains to his order, and, thus remove the doubt. Of course, the men on No. 31 need not raise the question, for they can depend upon it that the delivery of the order to themselves gives full assurance from the dispatcher that he does not mean No. 31 of the 9th, and they can find out from the register either that No. 7 of the 9th has gone, or that it has not gone, and therefore has no rights over a regular train like No. 31 of the 10th.—Editor Railroad Gazette.]

The M. C. B. Coupler.

Our issue of April 8 contained an abstract of a paper, "The M. C. B. Coupler," presented by Mr. Gustav Giroux, of the Chicago, Burlington & Quincy, at the March meeting of the Western Railway Club. It has already been stated that at this meeting a resolution was passed to refer this paper with the accompanying discussion to the M. C. B. committees on "Standards and Recommended Practice" and "Trains Parting," with the information that it is the sense of the Western Railway Club that there should be a recommended practice relating to the construction of drop testing machines for coupler tests, and that the requirements of coupler tests should be defined by the association. We now give some extracts from the discussion on the M. C. B. coupler at this meeting.

Mr. William Forsyth, Mechanical Engineer, Chicago, Burlington & Quincy: Now, when such a large number of cars are being equipped with couplers, these couplers should be made as good and strong as possible. The question is, What is a good coupler, or what is a strong coupler? And when we come to define that, it seems as if it were necessary that the M. C. B. Association have either as a standard, or as recommended practice, something which shows what kind of a testing machine should be used in testing couplers, and how many drops of the weight should be used to determine whether the coupler is good.

Mr. Peter H. Peck, Master Mechanic, Chicago & Western Indiana: Mr. Forsyth is right regarding coupler tests, but there is a greater question facing the railroad companies, the great variety of knuckles. We have about sixty different kinds of knuckles in use. Every inventor has a knuckle of his own. Some are on some cars and some on others, and the Master Car Builders' Association must soon face the question of adopting a standard knuckle or knuckles. We have got to rule out a great many knuckles, because every knuckle costs as much as a cast iron drawbar, and is a source of great expense.

Mr. A. M. Waitt, General Master Car Builder, Lake Shore & Michigan Southern: If we could reduce the number of kinds of couplers in the market it would be a decided move in the line of economy, and it would save those connected with the mechanical departments of railroads lots of grief.

Mr. J. C. McMynn, R. W. Hunt & Co.: Last week we were called upon to inspect some couplers, and were told to inspect them according to M. C. B. specifications. I looked through the Proceedings of the Association, and found that the Master Car Builders have no specifications for couplers. It is certainly desirable that there should be a standard method of testing couplers, and if we have a standard method and live up to the best practice of to-day, the best will remain in the market, and it will be possible to so raise the requirements from time to time that the number remaining will be small. For testing couplers there are no two drops in the country that are exactly the same and give the same tests.

Mr. G. W. Rhodes, Superintendent of Motive Power, Chicago, Burlington & Quincy: If Mr. Peck wants to stop having so many knuckles on hand he must advocate tests of the kind indicated in the paper. The cool, easy way in which railroads are expected to put on safety appliances, taking for granted that everything that is operated by air is a safety power brake, and that everything that couples on a vertical plane is a safety coupler, is the biggest piece of assurance that was ever heard. Let us consider air brakes. Up to 1887 absolutely none of the devices that had been introduced on railroads met the requirements, because up to that time no systematic method of testing the devices as they were introduced had been carried out.

On the question of couplers, with high speed trains and increased loads, the importance of having a coupler which will always remain coupled and stand the shocks incident to train service, is just as important as having an air brake that will work properly, and I believe before long the railroads which are more careful than others will not allow unsafe devices to come on the cars over their roads without making the fact very prominent, so prominent that it will not be profitable for any manufacturer to make an unsafe device, or for the railroad companies to apply an unsafe device.

Our argument as to cost is this: The Master Car Builders, having in view the general interchange of freight car equipment, and realizing that some car owners might be tempted to use inferior material, have gradually formed the interchange rules so that the car owner maintains practically his own car. It is, therefore, quite important for a railroad company to equip its cars with the strongest coupler it can buy. A railroad company is not always wise in being governed by the price of the material; it should also consider the specification and the test which the material will stand.

As a matter of fact, the national law is depending largely upon the mechanical departments of the railroads to keep these safety appliances up to a required standard. It is to the interest of the railroads to keep out appliances which are not safe, and if the M. C. B. coupler does not turn out as satisfactorily as was expected, it will be the master car builders and the motive power men who will be blamed for the failure.

Mr. F. W. Brazier, Assistant Superintendent of Machinery, Illinois Central: I can indorse what Messrs. Rhodes and Peck have said. It has been the bane of my life to have so many different kinds of knuckles and couplers. Our shops are filled with couplers which have been taken off cars, and for the replacement of which we could get none of similar make. We are rapidly approaching the time when we must adopt some standard, and I hope that day is not far distant. I do not express an opinion as to which coupler is the best, but if we could reduce the number to half a dozen, I should very much like to see it done.

Mr. C. H. Ferry, Latrobe Steel Co.: Mr. Rhodes has alluded to the fact that a railroad may put on its own cars the best material possible, and it may take in interchange cars equipped with couplers which are made of bad material; that road is then in danger in the operation of its trains.

I can speak of a personal experience with a certain coupler, which, so far as I know, has appeared on but one railroad. This coupler broke into three or four pieces from one blow at 3 ft. of a 1,640 lb. drop falling on the guard arm. It is dangerous, it is a crime to put on such a coupler, yet the railroads have no provision, no protection, against such material. Any railroad that is watching the quality of material in its couplers, and buys, either under test or not under test, a coupler which seems to be the best obtainable, and receives in interchange a car with a coupler such as that to which I have referred, is yet in danger of a wreck; the strength of its train is represented by the weakest and poorest coupler on that train. The wreck from the breaking of a coupler represents an infinitely greater expenditure than the mere free replacement or the repair of the coupler; it may mean the cost of equipping a thousand cars. Get the best material, but in any event take steps to weed out the poorest. I cannot believe that the best manufacturers are far apart in such a demand.

Specifications for Air Brake Hose.

A committee of the Central Railway Club, consisting of Messrs. E. D. Bronner, Assistant Superintendent of Motive Power and Equipment of the Michigan Central; J. A. Bradley and Robert Gunn, Foreman of Car Repairs, Erie Railroad, reported at the March meeting on "Specifications for Air Brake Hose," an abstract of which follows:

Heretofore the practice has been to a large extent to supply this material by placing an order and accepting any hose of the proper dimensions which would stand the required pressure and could be purchased for the least money. A time guarantee was about the only safeguard employed.

Of late there has been considerable agitation in favor of making specifications under which this material may be purchased and tested the same as other materials. The following is a specification issued by one of the rubber companies, and which is used by several of the railroad companies making reply to our inquiries:

1. All air brake and signal hose must be soft and pliable and not less than four-ply. The tube to be handmade and so firmly joined to the canvas that it cannot be pulled away without breaking or splitting the tube. The tube, friction, coating and cover to be of the same quality of gum.

2. All cotton duck to be used in air brake and signal hose to weigh not less than from 20 oz. to 22 oz. per yard, 38 to 40 in. wide, to be loosely woven and long fiber. Duck must be frictioned on both sides, and in addition to the friction must have a heavy coating of gum on one side, so when made up there will be a distinct layer of gum between each ply of duck. Hose without the coating will be rejected.

3. The tube to be not less than 3-32 in. thick. The inside diameter of freight hose must not be more than 1 5-16 in. nor less than 1¼ in. Ontside diameter not more than 2 in. nor less than 1⅞ in. The inside diameter of passenger and signal hose must not be more than 1 1-16 in. nor less than 1 in. Outside diameter must not be more than 1¾ in. nor less than 1 11-16 in. Diameter to be as specified throughout the entire length. All short lengths to have capped ends. All caps must be vulcanized on, not pasted or cemented on.

4. Each standard length of air and signal hose must be branded with the name of the manufacturer, and the year and month in which made, name of road, and a table of raised letters denoting the years and months.

Friction Test.

The friction will be determined by the force required to unwind a section of hose 1 in. in length, the force being applied at the point of separation. With a force of 25 lbs., the separation must be uniform and regular, and when unwound from outside to tube the average speed must not be greater than 12 in. in 20 minutes.

Stretching Test.

The 1 in. section of the tube or inner lining should then be taken from the piece of 1 in. section used in the friction test, and cut at the thickest part of lap; then marks 2 in. apart will be placed on it and stretched 10 in. from the aforesaid 2-in. marks and released immediately. It will then be remarked, and will be stretched 10 in. or 400 per cent. without breaking, to remain stretched ten minutes, and to be measured ten minutes after the strain is removed. In no case must

the piece show more than ¼ in. permanent set or elongation in 2 in. Hose should be at least from three to seven days old before testing.

All rejected material may be returned, the shipper paying freight both ways.

Specifications for air brake and signal hose used by the Lake Shore & Michigan Southern, the Erie and the Chicago, Burlington & Quincy were also given by the committee in full. The Lake Shore & Michigan Southern specification varies from the one quoted in the following particulars:

Hose shall be not less than two-ply nor more than three-ply. The outside diameter of hose shall be increased for a distance of 2¾ in. at either end from an inside diameter between 1¼ in. and 1 5-16 in. to 1 7-16 in., and the outside diameter shall be enlarged at the ends from between 1⅞ in. and 2 in. to between 2 1-16 in. and 2 3-16 in. Each hose for air brake or signal purposes must stand a proof pressure test of 300 lbs. without failure of any kind. The test hose, one out of every lot of 200, must stand a pressure of 500 lbs. before bursting.

The hose specification of the Erie is exactly the same as that used by the Rubber Company before referred to. The Chicago, Burlington & Quincy specification provides merely that each piece of air brake or signal hose be not less than four-ply and withstand a pressure of 650 lbs. per sq. in., two extra pieces for test being furnished with each lot of 50 lengths. Hose bought in lengths or coils, the entire length must withstand a pressure of 250 lbs. per sq. in., while samples cut from any point for test must withstand 650 lbs. per sq. in. pressure.

The Chicago, Milwaukee & St. Paul has not adopted a formal specification, but tests the hose for resistance to bending and kinking by fixing one end of a length and connecting the opposite end to the crosshead of a vibrating machine driven by a rod and crank from a shaft. This crank makes 45 revolutions per minute, and the crosshead has a travel of 14 in. The hose is subjected to air pressure during the test, and the endurance of the hose is measured in the number of hours run before failure takes place.

The committee states that the requirements of an air brake hose are well known. It must form a flexible connection between the train pipes of the cars in a train, and is subject to a varying internal air pressure up to a known limit; it is constantly exposed to the elements, and when in use is continually being vibrated or swung, and sometimes kinked.

Cars are sometimes parted without uncoupling the hose by hand, and an unusual and severe strain is put upon them, which in the case of a weak hose is apt to cause failure.

In devising a specification and tests under which to purchase hose to meet these requirements, the following are some of the points which must be met:

1. Strength to withstand the internal pressure and to resist the pulling strains sometimes put upon the hose.
2. Flexibility to permit constant variations from any fixed line through the length of the hose, as required by its functions, with the least deterioration of the material and to resist the effects of more or less kinking, as long as possible.
3. Quality and manipulation of the material to insure a strong and elastic tube, and the thorough vulcanizing of the tube to the fabric and the different layers of the fabric to eath other, so that the component parts of the wall of the hose are strongly, yet elastically united as a whole.
4. Protection of the material of the hose from the action of the elements.
5. Dimensions to meet the requirements of the purpose for which the hose is intended, and to permit of the proper application of necessary fittings with the least chance of injury to the hose.
6. Proper permanent labels for the purpose of keeping desired records.

The bursting test of air brake hose has been placed at 500 to 650 lbs. per square inch, the proof pressure test at 300 lbs. per square inch. The strength is also insured by fixing the weight and quality of the fabric, the number of wrappings and the quality of the tube and friction.

Where the latter method is used there seems to be no great variation in the requirements for the fabric, but where some specify not less than four plies of fabric, others call for from two to three. On account of the various methods of building up a hose some range should probably be allowed. Where the fabric is composed of woven seamless material vulcanized to perfect tubes, two plies would appear to be sufficient. The specifications that call for not less than four plies would eliminate this type of hose from competition.

For a wound hose four plies are probably about the maximum limit that will produce soft and flexible hose, with the quality of fabric specified. With the friction called for it will probably afford sufficient strength. Air hose has been made with as many as nine wrappings, but this entailed a thin, finely woven fabric, which could not be frictioned properly, and produced a stiff, hard hose.

The flexibility of a hose is certainly put to a severe test by the vibratory testing machine. It is also insured by fixing the quality and weave of the fabric, and the quality and elasticity of the gum in the tube and between the layers of the fabric.

By getting the proper quality of gum in the tube, and between the layers, which quality can be demonstrated in the case of the tubing by the stretching test, solidity of the walls is insured with sufficient elasticity, as it permits of thorough vulcanizing of the gum to the fabric. A slight injury or defect in the tube will therefore not be so disastrous as the air cannot so easily separate the tube from the fabric and the layers from each other.

The method employed for the protection of the hose materials from the elements, is to call for a perfect outer covering of gum of the same quality as the tube with capped ends vulcanized on.

In the inside diameters there seem to be some variations. The question is, for, say, a nominal 1¼-in. hose, should the hose be accepted as small as 1¼ in., or should it be enlarged within limits for ease and safety in applying fittings? Should also this enlargement be carried throughout the length of the hose, or should it be confined to a short distance on the ends? All the labels specified seem to furnish necessary records.

The Height of Drawbars.

The quesion of the height of drawbars as provided for by the Interchange Rules and also by law was discussed at the March meetings of some of the Railroad Clubs in connection with the revision of the Rules. The Committee of the Central Railway Club on the Revision of the Interchange Rules, in its final report states that "Experience has shown that the variation of three inches in height of drawbars is insufficient, and we would therefore recommend that steps be taken to make the maximum height 35 in. instead of 34½ in., allowing the minimum height to remain at 31½ in."

Mr. J. R. Petrie, in explanation of this recommendation, said that if the ½ in. asked for, in addition to the maximum height from the top of rail to center line of drawbar, be granted it is not intended for roads in adjusting cars to raise them an additional ½ in. The new height is intended to be for empty cars only, and it is considered that the question of the maximum height of drawbars could be solved satisfactorily if ½ in. were added to the present maximum height. No serious trouble is caused by the dimension 31½ in. for the minimum height, but if there should be a desire to retain the allowable variation at 3 in., a satisfactory compromise would be 35 in. maximum and 32 in. minimum.

The corresponding committee of the Western Railway Club recommended that the rule covering the allowable height of drawbars be changed so as to read that the average of two end measurements be taken as the true height of the car, whereas the rule now provides that the measurement at each end be considered separately. The committee explained that in this way the error introduced in the measurement of cars due to irregularities in the track might be eliminated. It was thought best, however, not to adopt the recommendation, as it might lead to difficulty with the Interstate Commerce Commission, and Mr. A. M. Waitt suggested instead "that we call the attention of the Interstate Commerce Commission to the fact that the limit height given is such that it brings great hardship, and ask that some modification in standard height be made and the railroads be notified to that effect."

Cars Fitted With Air Pipe and Hose Only.

At the March meeting of the Western Railway Club the question was discussed as to what can be considered the necessary proportion of air brake cars in a train to enable it to be controlled as required by law, and in what proportion can cars fitted only with air pipes and hose be used in long trains and still retain the quick-action feature of the brakes. The Westinghouse Air Brake Co. has stated that the quick-action feature cannot well be carried through four cars equipped with plain train pipe, while, on the other hand, it is convenient to have cars without brakes fitted with pipe, so that mixed trains can be made up in station order.

Speaking on this topic, Mr. G. W. Rhodes said in part: It is generally conceded that driver brakes, tender brakes and brakes for one-quarter of the cars, are considered sufficient braking power to control the speed of a train without any assistance from the trainmen, and, therefore, by providing this amount of braking power we comply with the law. On our line we have roughly assumed that with one-third of our equipment fitted with air brakes we would not have serious difficulty in complying with the law; but we do not expect to stop at one-third, and I do not believe that any railroad will stop at one-third. With high-speed trains and heavy cars, the most serious trouble that we have is the break-in-two, and the break-in-two is serious because it may occur and neither the men on the front end nor those on the rear end know of it until too late. I have heard many railroad men say that what is now most wanted is some means of communication from the engine to the way car on freight trains, so that when a break-in-two occurs the men at both ends of the train will be notified of the accident. With long freight trains the best way of accomplishing this is by having every car equipped with air brakes. I believe that no railroad will attempt to have any independent air signal, or cord signal, or electric signal between the cars.

On our line at the present time we seldom run stock trains that do not have air from the front end to the way car. Those who are connected with lines from Chicago west, will know of cars equipped with pipe only, used in traffic west of the Missouri River. This is practiced by the Union Pacific and by the Southern Pacific quite largely and with success, and it seems to me that it is a matter deserving of considerable attention. A certain proportion of old cars on which it is not desirable to put air brakes might profitably be equipped with a train pipe, and this can be done very cheaply, because there is no need of applying stop cocks; the hose can be fastened direct to the pipe. If 1¼ in. pipe is put on it is not wasted, because when the car is withdrawn from service the pipe can be used to equip other cars that may have air brakes. We recently made a recommendation on the Burlington road that a thousand cars be fitted in the manner described.

Mr. C. A. Schroyer said: "I should say that the law in regard to applying air brakes is lax, in that it does not require all cars built after the enactment of the bill to be equipped with air brakes. As an association, we should not encourage the practice of equipping freight cars with only an air pipe and hose connections. This would only enable us to make up in mixed manner a train of cars equipped with air brakes. We want to-day cars equipped with air brakes, not because the law so requires, but because the air brake is a good thing and a necessity of the service. There is a tendency on the part of a great many railroads and private lines, which consider that they are complying with the requirements of the law, to have some of their cars fitted up with air brakes, and another portion fitted with air brake pipes and hose. We, as an association, should say or do nothing that would encourage equipping a car with only pipe and hose. It should be remembered that there is no item of construction in use on cars to-day that deteriorates so little as the air brake apparatus. Our brakes which have been in service for years work just as well to-day as they did when they were put on. There is no other part of the car of which the same may be said. There is no good reason why a car that is five or six years old should not be fitted with air brakes, because we can reasonably expect that such a car will continue in service for ten or twelve years longer.

A Railroad Commission for Louisiana.

The convention now sitting in New Orleans for the purpose of revising the constitution of Louisiana, has adopted an ordinance creating a State Railroad Commission. It contains a proviso that no member of the convention shall be eligible to the office of Railroad Commissioner for 10 years. We judge from the reports in the New Orleans papers that the arguments for and against the establishment of a Commission have been vigorous on both sides, and somewhat numerous. Mr. Julius Kruttschnitt, General Manager of the Southern Pacific, made an argument before a committee of the convention, devoting himself chiefly to a statement of the numerous readjustments of rates that have been made by his road during recent years. These adjustments were the result of negotiations which were not only friendly, but eminently satisfactory to both sides. Mr. Kruttschnitt further enlarged on the extensive water competition which affects railroad rates in nearly every part of Louisiana. Mr. F. M. Welch, of Alexandria, a railroad promoter, argued before the committee to the effect that large amounts of capital now ready to be invested in Louisiana would be withheld if a commission should be established. Mr. Welch said he would much rather try to conquer Spain than to conquer the aversion of capitalists to investing in Louisiana, if their investments must be subjected to the authority of a railroad commission.

The most specific argument on the other side consisted of statements concerning high rates for short distances over lines which carried freight longer distances to competitive points at very low rates. Goods can be sent to the competitive point and returned some distance toward their starting point and a saving effected. The argument which seems to have carried the day was that based on the general advantage of more direct State supervision of transportation, reinforced by reports of satisfactory results in other states.

It was alleged at one of the hearings that the Southern Pacific had hired Mr. Masters, a former Commissioner of the Freight Bureau at New Orleans, paying him a high salary, because the road saw that the maintenance of an efficient bureau by the merchants of the city was a powerful instrumentality in reducing transportation rates. We may remark in passing that if that is the destiny of traffic men who serve the New Orleans Freight Bureau we can find a few score of good candidates at any time when a vacancy may exist. The railroad that sets out to buy up all the good traffic men that New Orleans can find will have a big job on its hands.

The convention has adopted an ordinance similar to the clause now in the Constitution of the State of New York, prohibiting members of the Legislature and all State officers from accepting or using free railroad transportation, or free passes for telegraph or telephone messages.

Eight-Wheel Passenger Locomotives for the Long Island Railroad.

The Long Island Railroad has received five new eight-wheel passenger engines, built by the Brooks Locomotive Works. These engines are designed to burn anthracite coal, but the grates are so arranged that either hard or soft coal may be used.

The total weight in working order of each of these engines is 105,000 lbs., of which 70,000 lbs. is on the driving wheels. The wheel base is 22 ft., the driving wheel base 7 ft. 6 in. and the total wheel base of engine and tender is 48 ft. 5 in. The driving wheels are 67 in. in diameter with cast steel centers, the engine truck wheels are 30 in. in diameter and the tender truck wheels 33 in.

The cylinders are 18 x 24 in. and are lagged with wood and jacketed with plain iron, painted. The cylinder head and steam chest casings are of pressed steel, while the crossheads are of cast steel. Richardson balanced valves are used having a maximum travel of 5½ in., ¾ in. outside lap and no inside lap.

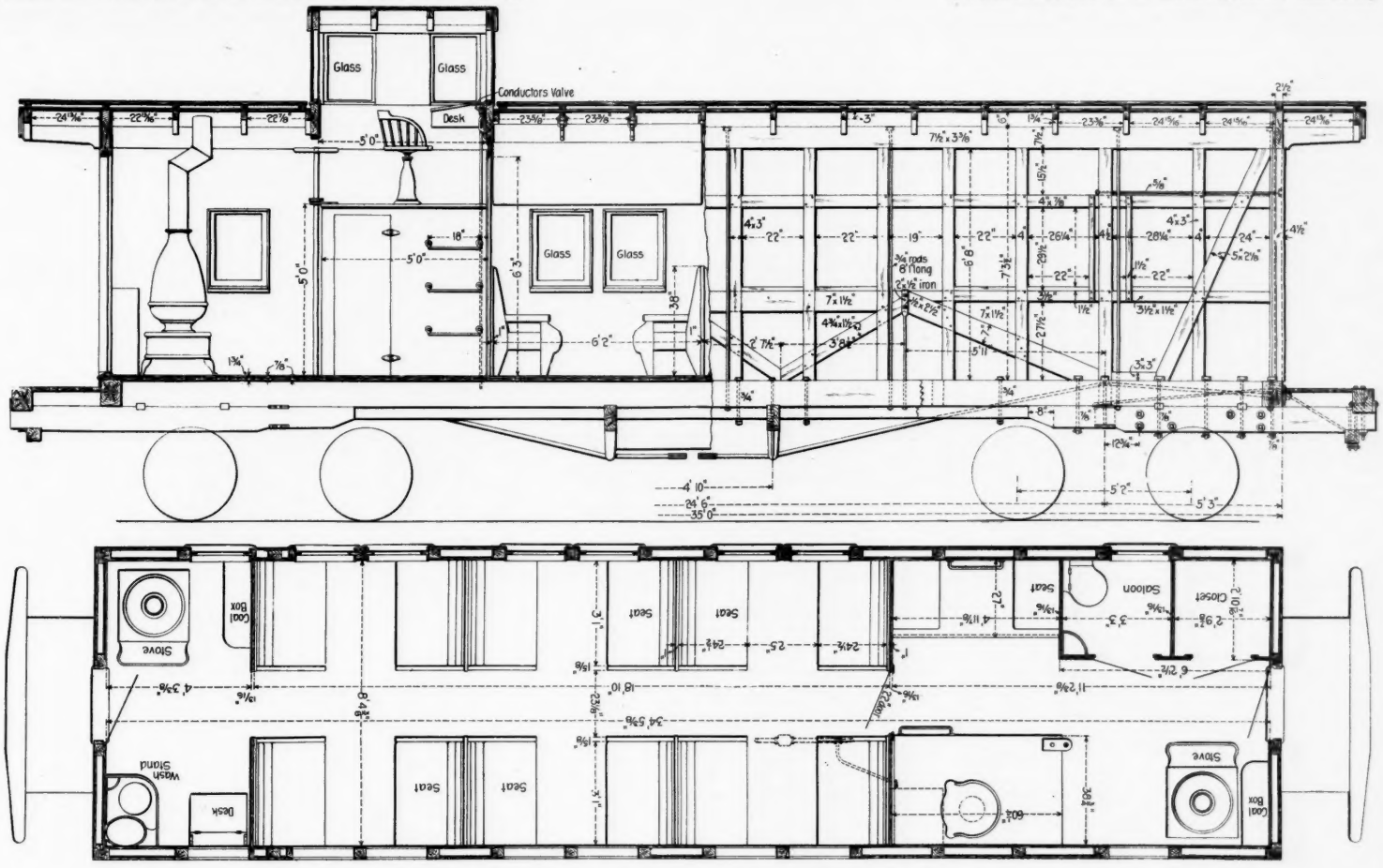
Tho boiler is of steel of the radial-stay, wagon top type, 56 in. in diameter at the smallest ring of the barrel. The smoke box door and front are of pressed steel. The horizontal seams are lap joints, quintuple riveted, while the circumferential seams are double riveted laps. The thickness of the tube sheets is ½ in. and that of the crown sheet ⅜ in. A 3½ in. water space is provided on all four sides. The boiler is lagged with asbestos board with an air space and jacketed with plain iron. Schoenberger steel ⅝ in. thick is used for the firebox, which is 11 ft. long by 3 ft. 6 in. wide. There are 225 charcoal iron tubes, 2 in. in outside diameter by 11 ft. 5⅛ in. long. The tender has a capacity for 4,000 gals. of water.

The special equipment used consists of: Taylor truck wheel centers, Latrobe tires; steel driving and truck axles, crank pins and piston rods treated by the Coffin toughening process, Ajax metal bearings, A. French springs, Fletcher pressed steel journal box lids, American driver and truck brakes on the engine and Westinghouse air brakes on the tender, Westinghouse train signal, Westinghouse 9½ in. air pump, front and back drawbars by the Standard Coupler Co., McIntosh blow-off cocks, Prince boiler checks, Prince muffled safety valves, Sellers No. 9½ class N injectors, Detroit lubricators with Tippett attachment, Sherburne sanding device, U. S. stay bolt iron, Golmar bell ringer, Foster reducing valves and U. S. metallic packing for valve rods, piston rods and air pumps.

35-Ft. Cabooses for Stock Trains, Illinois Central Railroad.

The accompanying illustrations show the arrangement and construction of the new 35-ft. cabooses built by the Illinois Central for the accommodation of drovers on its live stock trains. Six of these cabooses are now in service. They are 34 ft. 5⅜ in. long by 8 ft. 4⅜ in. wide, inside measurements, with seating accommodations for 24 persons, and the seats can be converted into berths at night sufficient for 12 passengers. The railroad company provides each car with blankets, linen and toilet articles, the intention being to make the cars as comfortable and attractive as possible. In the daytime the bedding is put out of the way in suitable racks above the berths.

Especial attention has been given to the design of these cars to make the framing strong and substantial, as shown by the drawings, while heavy draft rigging with double coil springs has been provided to take up the shocks. The trucks are of the diamond type, with wooden swing bolsters carried on elliptic springs, being the standard caboose truck of the Illinois Central. As nearly all the stock cars of this road have air brakes, these cabooses are fitted with air brakes and conductors valves.

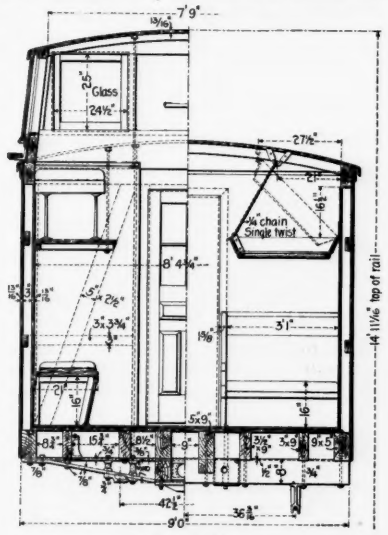


35-ft. Caboose for Live Stock Trains—Illinois Central Railroad.

We are indebted to Mr. William Renshaw, Superintendent of Machinery, of the Illinois Central, for the drawings.

Railroad Pooling and Sound Public Policy.*

What is a sound public policy? And what is meant by pooling? It has been said that, no matter how large may be an assembly, the public is always taken, in a vague sort of way, to represent those who are absent. The politician declaims about his duty to the public, and the public, being accepted as meaning the absent and unheard-from members of the body politic, is but a shadowy sort of taskmaster; but the public in the United States of America "consists of every member of the population in any way interested in any public question that is to be considered."



Cross Sections.

Illinois Central Caboose.

In our national legislature and elsewhere it has become the established custon to deal with the question of the relation of railroad pooling to the public without a thought that the army of citizens, who are directly or indirectly dependent upon the successful operation of our railroads, are entitled to any consideration whatever. It is estimated that the employees of the railroads and their families aggregate about 4,000,000 of our population. Are they entitled to no consideration? Think also of the men who mine the fuel the railroads consume; fell the trees that furnish their cross-ties and timber; mine and manufacture the metal used in their tracks, bridges, etc.; also, the small depositors in our savings banks and all those who are provident enough to insure their lives and properties, because the stability of the savings banks and insurance companies depends largely upon the value of the railroad securities in which their funds are invested. Is it not amazing that no national legislature has ever yet paid any attention whotsoever to the interests of this army of citizens, directly or indirectly dependent upon railroad earnings, when questions as to the relations of the railroads to the public have been under consideration? Why should they be ignored or discriminated against?

Some years ago a Congressional investigating committee met to hear any one who had any grievance against the railroads. One gentleman stated he was a large manufacturer of stoves, and he thought the railroads were outrageously mismanaged. A pleased smile passed from the Chairman around the circle of the committee; this was promising. The gentleman then went on to state that the mismanagement consisted in the failure on the part of the railroads to charge what their tariffs called for, and what was apparently necessary to give their security holders a fair return on their properties. The matter had been brought to his personal attention through the failure of a widow in the central part of the State to pay for stoves she had purchased. She was dependent on the interest from her investment in railroad securities, and this interest had not been paid. It is needless to say the committee had no further use for that witness.

An unquestioned agreement on the part of the great mass of the people as to what is for their best interest under known conditions can alone establish a true public policy. It must of necessity develop slowly, and must change with changed conditions, or it cannot be a safe guide in framing national legislation.

Railroad pooling is merely one of the details in the great, universal work of distribution, a work that commenced when two people first appeared on the face of the earth, and that must continue until Hood's "last man" is earth's sole occupant. Savage tribes wanting some things that others had or wanted, knew no better way to gratify their desires than by resort to brute strength. Under such conditions distribution meant war. . . . Shall distribution be by agreement under peaceful methods, or must it be by methods savage and warlike? When applied to railroads, shall the competitive business of which they each seek a share be distributed under the peaceful methods of civilization by agreement and according to law, or must there be commercial war, with all its degrading consequences? Can a sound public policy require, as do the present policy and law of this country, that methods of distribution must be resorted to, degrading alike to the carrier and merchant?—methods that tempt mercantile honor and honesty beyond the power of resistance; methods causing the merchant to misrepresent facts to the salaried agents of the carrier, as to competitive conditions, in the hope that the carrier may thereby be induced, in collusion with the merchant, to violate the law. A law unjust in itself and conceived in a spirit of persecution of citizens interested in one honorable industry can never commend itself to the people as worthy of their respect.

. . . It can never be in the power of associated railroads to ignore the existence of competitive forces operating to limit maximum rates in every branch of their service. Exorbitant rates established by any association of railroads would simply result in diverting their business into other channels. Our country is gridironed by rail and water carrying routes, ca-

*Extracts from a paper by Frank J Firth, President of the Erie & Western Transportation Company, read before the Merchants' Association of New York, April 15, 1898.

pable of unlimited combination in forming new competitive lines. Each advance in rates within strictly just and reasonable limits upon any short-line carrying route is followed by the coupling-up of out-of-the-way lines in every direction, creating new, long routes and illegitimate competition. There is also the competition of markets. . . . Again, can any intelligent person seriously imagine that our national or state legislatures would, under any possible conditions, permit any carriers associated under any statutes to impose unjust rates or conditions on people upon whom the members of these legislatures depend for their continuance in office?

It has never been seriously claimed anywhere that any one of the numerous pools formerly in existence operated to discourage the development and improvement of the carrying service. A pooling agreement may be devised that will operate to stimulate further effort on the part of carriers to improve their public service by providing rewards for success in this direction. Such an effort should be made. It appears to be entirely practicable. . . . Maintained rates and agreements encourage honesty and honorable dealing on the part of carriers and merchants. Distrust breeds dishonest practices, placing temptation in the pathway of the innocent. Unsettled and preferential rates favor monopolies in manufacture and trade. They strengthen the strong and ruin the weak. Small dealers suffer while great ones thrive.

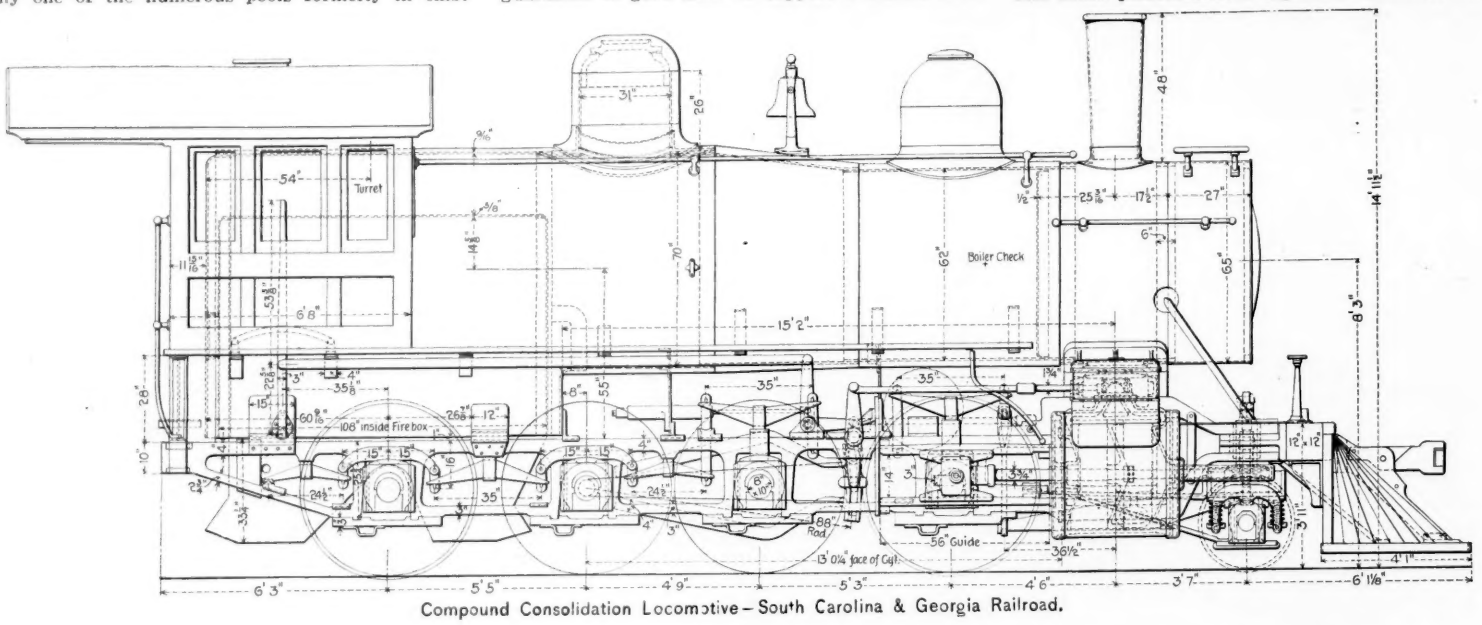
Public tariffs should not be advanced, and may be reduced, under the operation of pooling agreements. It is impossible to equitably adjust rates between routes of different grades of efficiency when there is no accurate knowledge as to the relation between published tariffs and rates actually obtained. The ingenuity of the traffic manager will be more usefully employed when devoted to improving the public service, instead of, as now, to devising methods to evade the law and distance some competitor in this line of effort.

Pooling will make possible a simpler and more efficient public service. It is among the possibilities of pooling that the associated lines may establish a transit insurance bureau, in which can be placed some share of their current revenues. Having this bureau and fund, we may see the present bill of lading and dilatory methods of settling just claims replaced by a simple, unconditional receipt for property and a certificate of the insurance bureau that will guarantee the delivery of the property at its stipulated destination, with the immediate payment of whatever may be required to make good any loss, damage or shortage. Pooling has been discredited in the past by wholly unnecessary diversion of shipments between railroads without the consent of the owner. These transfers have been made to equalize pooling shares agreed upon between the interested lines. Such transfers were, probably, never necessary under any circumstances and they should never have been made without the consent of the owners of the property. They represent some of the early mistakes made in the development of pooling, and they are mistakes for which the railroads have sadly suffered. The relative value of competing routes may only be justly decided by the shipper. Shippers of property moved in large volume might in open competition with each other offer the commissioner representing the associated carriers the right to route as he should see fit some stipulated number of tons in the week, the shipper to name the reduced differential rate he would require on each of the routes, as compared with the standard rate. Shippers thus brought in competition for the privilege of having their freight diverted from the route of their first selection would soon reduce the consideration they require to something fairly representing the actual value to such shippers of the respective routes.

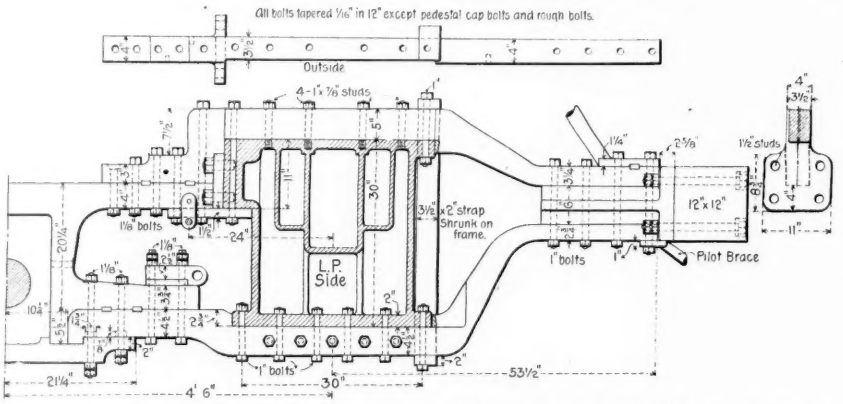
Pooling agreements must be alike fair to the carriers and to the public, and there must be disinterested arbitrators. Arguments before arbitrators are most effective when they deal with past experience rather than with future expectation; and yet, one cause of failure in pooling agreements has been this tendency to recognize the past and to ignore the future. It is suggested that pooling agreements should divide, say, 95 per cent. of the business, or its results, currently, and set apart 5 per cent. as a guarantee of good faith to support a transit insurance bureau, and also as a means of rewarding good public service. At the end of each year, when its results might be reviewed, an impartial board could hear arguments and distribute the reserved percentage among the associated lines that had complied with every agreement obligation, in such shares as might then be deemed necessary. It may be necessary to make statutory provision for compulsory arbitration.

Pooling agreements do not necessitate making rates the same by all interested routes. One of the weaknesses of many of the old-time pooling agreements was the identical form of weakness that is found in the labor organizations of the present day. They attempted to assert an equality in value between the different routes that did not exist in fact, and, therefore, the agreed distribution of business could not be effected under the established rates. This was a constant source of trouble, for the service by different transportation routes differs in salable value. Neither men nor carrying routes are created equal in all respects. An attempt to charge the same price on an inferior route for a bad service that is charged on another route for a better one must result in the inferior route giving private and preferential rates to favored shippers in the attempt to obtain the share of the business awarded to said route.

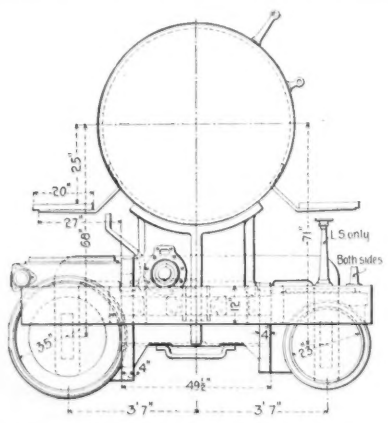
It is universally conceded by merchants and carriers that just rates can only be obtained through statutory provisions. It is also conceded that the present interstate law has failed of its purpose. We have new and radically changed conditions since the present law was enacted, and we have the added experience of ten years to enable us to deal with them intelligently. It would be desirable to frame an entirely new law to replace the one now upon the statute books. This might be done upon the basis of a recommendation by a mixed commission composed of the Interstate Commerce Commissioners and an equal numer of representatives from the carriers and from the mercantile communities they serve, respectively.



Compound Consolidation Locomotive—South Carolina & Georgia Railroad.



Details of Low Pressure Cylinder Fastenings—S. C. & Ga. Compound Consolidation Locomotive.

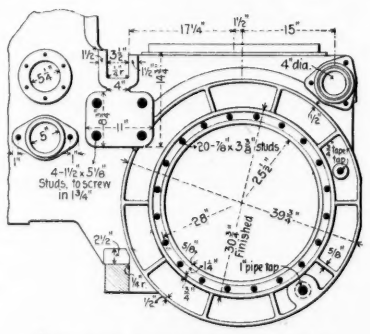


S. C. & Ga. Compound Consolidation Locomotive.

Compound Consolidation Locomotives for the South Carolina & Georgia Railroad.

The new consolidation locomotives for the South Carolina & Georgia Railroad represent the latest practice of the Richmond Locomotive Works in building heavy two-cylinder compounds. Five engines similar to the one illustrated have been delivered, which were designed by the builders from data furnished by Mr. J. H. Sands, General Manager of the South Carolina & Georgia, as to the special requirements of the service and the general conditions to be fulfilled. These engines have not been used long enough to admit of an accurate comparison with the performance of the single-expansion freight engines in use on that road, but it is said that the new compounds are hauling trains equivalent to nearly two trains for a simple engine, and are making a favorable showing in the consumption of fuel. After the enginemen become accustomed to handling the compound locomotives and all the moving parts have been brought to good bearings a still better performance is expected. Indicator cards taken while the new engines were hauling maximum loads and working compound, show a very even distribution of the work done in the high and low-pressure cylinders.

The engine illustrated has a total weight of 150,000 lbs., with 133,000 lbs. on the driving wheels. The cylinders are 23 in. and 35 in. in diameter by 26 in. stroke, and the diameter of the driving wheels is 56 in. The boiler is of the radial stay extended wagon top type, 62 in. in outside diameter at the smallest ring of the barrel, and carries a working steam pressure of 200 lbs. per sq. in. The firebox has a level grate, and is wholly above the frames; the length of the firebox inside is 9 ft., the width 3 ft. 6 in., and the depth 5 ft. 10 in. There are 298 tubes 2 in. outside diameter, and 13 ft. 6 in. long. The heating surface of the tubes is 2,104 sq. ft., that of the firebox 177 sq. ft., making a total heating surface of 2,281 sq. ft.; the grate area is 31.5 sq. ft. The tender has a capacity of 4,000 gallons of water and 7 tons of coal.



Rear View, Low Pressure Cylinder.

A special feature of the design is the method used for connecting the front rail of the frame to the back of the cylinder saddle on the low-pressure side. This construction is clearly shown in the accompanying engravings, and has been found very satisfactory for heavy locomotives. The illustrations

also show how the back cylinder head on the low-pressure side is arranged. It will be seen that a portion of the back head is cast solid with the low-pressure cylinder, which reduces the diameter and weight of the head and also materially strengthens the cylinder.

The arrangement for changing from simple to compound working is the latest used by the Richmond Locomotive Works:

The following are the principal dimensions:

Compound Consolidation Locomotive.

Gage	4 ft. 8½ in.
Fuel	Bituminous coal
Weight on drivers	133 000 lbs.
" " truck wheels	17,000 lbs.
" total	150,000 lbs.
" tender loaded	85 000 lbs.
Wheel base, total, of engine	23 ft. 6 in.
" " driving	15 ft. 5 in.
" " total (engine and tender)	49 ft. 0 in.
Height, center of boiler above rails	8 ft. 3 in.
" of stack, " "	14 ft. 11½ in.
Heating surface, firebox	177 sq. ft.
" " tubes	2,104 sq. ft.
" " total	2 281 sq. ft.
Grate area	31.5 sq. ft.

Wheels and Journals.

Drivers, number	8
" diameter	56 in.
" material of centers	Cast iron
Truck wheels, diameter	30 in.
Journals, driving axle, size	8 in. x 10 in.

Cylinders.

Cylinders, diameter	23 and 35 in.
Piston, stroke	26 in.
Main rod, length, center to center	10 ft. 1¾ in.
Steam ports, length	H. P. 20, L. P. 26 in.
" " width	" 1⅝, " 2 in.
Exhaust ports, length	" 20, " 26 in.
" " width	" 3, " 3 in.

Valves.

Valves, kind of	Richardson balanced
" greatest travel	H. P. 5½, L. P. 6 in.
" outside lap	" 1⅛, " ¾ in.

Boiler.

Boiler, type of	Extended wagon top
" working steam pressure	200 lbs.
" material in barrel	Steel
" thickness of material in barrel	⅝ and 11/16 in.
" diameter of barrel, outside	62 in.
Seams, kind of horizontal	Sextuple riveted
" " circumferential	Double riveted
Thickness of tube sheets	½ in.
" crown sheet	⅜ in.
Crown sheet stayed with	Radial stays

Firebox.

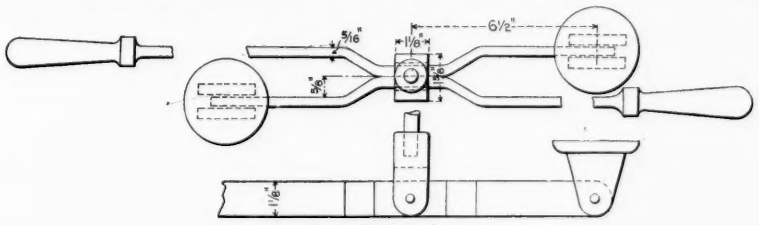
Firebox, length	9 ft. 0 in.
" width	3 ft. 6 in.
" depth front	70 in.
" " back	70 in.
" material	Steel
" thickness of sheets	5/16 in.
" water space, width—	
Front, 4 in.; sides, 3 in.; back, 3 in.	
Grate, kind of	Rocking

Tubes.

Tubes, number	298
" material	No. 12 charcoal iron
" outside diameter	2 in.
" length over sheets	13 ft. 6 in.
Smoke stack	Taper
" " least diameter	15¾ in.

Switching Engine, Chicago, Burlington & Quincy Railroad.

There are now in operation in the Chicago, Burlington & Quincy yards at Galesburgh, Ill., three "Class G" switching engines so arranged that they may be handled from either the right or left-hand side. These switchers are used in a poling yard, so that it is often convenient for the engineman to be on the side next the track upon which cars are being shifted. The accompanying engraving shows the cab arrangement of one of these engines, and it will be noted that both sides are fitted with engineer's brake valves, reach rod, reverse quadrants and whistle levers. The details of the reverse lever are also shown. This is in two parts, and can be changed from one side to the other; the throttle lever, by removing a loose-fitting pin, can be quickly turned over, two throttle links being provided. To change the throttle and reverse lever from one side to another requires less than a minute.



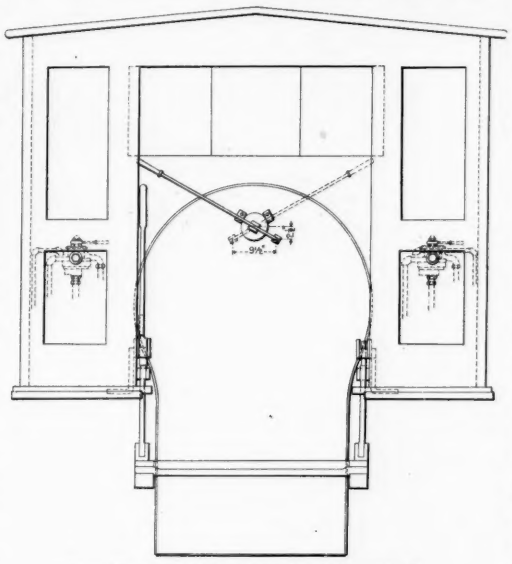
Detail of Whistle Levers.

The arrangement described has been found very convenient for engines used for poling cars on either side, and was designed by Mr. R. W. Colville, Master Mechanic, at Galesburg, Ill.

Loading Long Lumber.

We have already noted that a meeting of representatives of twelve Southern railroads was held at Atlanta, Ga., Feb. 15, to consider the difficulties arising under the rules for loading long lumber and suggest modifications. The results of the meeting have been presented in a circular to the several railroad clubs for discussion, with a view to modifying these rules at the next M. C. B. Convention. The circular says:

"It was the opinion of all, based upon their observation, that the rules should be modified, inasmuch as they worked a hardship in a great many points without in any way enhancing the safety of employees or of the train. The principal hardship is in the reading of Rule No. 7. Under the general interpretation of this rule a load that comes just even with the end of the car can pass without wiring, but if it projects at all beyond the end sill it must have the stakes wired at the top, regardless of the



Rear View of Cab of C., B. & Q. Switcher.

height of the load, although, perhaps, there is but a few inches difference between the length of the loading that will pass without wiring and one that will not. Another thing that is manifestly improper is the requirement of wiring the stakes when the load exceeds 3 ft. in height, without any other classification. The average loading of car sills, or other lumber from 34 to 36 ft. long, is from 37 to 40 in. high, and is perfectly safe to pass with the stakes secured with boards and without wiring. Another thing is the extensive clearance around the brake staff as now required. If the lumber clears the brake wheel so as to make it accessible and operative, it is all that is necessary. There is no necessity for the 18 in. called for."

A revision of the rules was also presented to cover the points mentioned above.

The Jungfrau Railroad.

A Zurich newspaper describes the preparations for winter work on the Jungfrau Railroad, where the workmen live in a Klondike climate, but, it seems, are not much exposed to the weather. The mouth of the tunnel where work is going on is close to the great glacier amphitheatre. Here have been erected two roomy buildings, anchored fast to the rock. These houses serve for the homes of the workmen and the offices of the engineers; while the provisions and stores are kept in a third stone building. The dwelling houses have each a large dormitory, containing about 40 beds, hospital, rooms, etc. They have effective heating apparatus, and electric light, and triple sash in the windows. From the upper house, which contains the shops, bake-house, offices, bath-rooms, etc., an inclosed wooden gallery leads directly to the tunnel portal, so that the miners pass to and fro without being exposed to the weather.

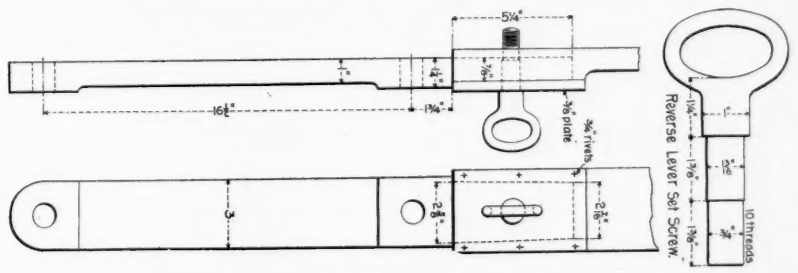
The motive power is electricity, generated at Lauterbrunnen, 6 miles distant, by a 1,000 H. P. dynamo, which will furnish motive power for the trains when the road is completed. The rock is a very hard and compact limestone, and no lining is required, which is fortunate on account of the scarcity of water for mortar in winter. Water to keep the drills from heating is supplied by melting ice and snow. The drills bore holes 1.2 to 1¾ in. in diameter and about 40 in. deep. The smoke from blasting is exhausted by electric ventilators. It is hoped to have the tunnel about half way through the Eiger wall by spring. A resident physician is kept. The wind here comes in a downward direction over the steep slopes of the mountains, with such force that it is often impossible to walk or even to stand in the open air, and very difficult to breathe. A watch is kept all night for fear of fire, which would be hard to deal with on account of the scant supply of water.

The Boston Elevated Railroad.

The plans adopted for the Boston Elevated Railway are now before the Massachusetts State Railroad Commissioners, and are of especial interest, in view of the efforts of the management to produce something which will be an essential improvement on anything of the kind yet erected.

The general form of the structure is substantially that presented in our issue of July 2, 1897 (p. 472), consisting of a double row of posts supporting longitudinal and transverse half-lattice girders. The transverse girders have two forms, one flat, the other arched; the former to be used in narrow streets, where the posts will be set in the curb-line on either side; the other in wide streets, where the posts will be in the street, as near together as possible (24 ft. between the two rows), and where, the tracks being each directly above a row of posts, the arched girders will act only as stiffeners against lateral motion. These are the chief typical forms, but others are adopted at different points, in particular that in which the transverse lattice and arched girders are replaced by plate girders.

The top of the rails will be 20 ft. above the street level at the stations, and the lowest point of the girders 14 ft., the girders being 4 ft. to 6 ft. deep. The posts will be 15 in. square, consisting of two 15-inch channels



Detail of Reverse Lever

connected by a made-up beam. The aim followed in the design is to give as light and airy an appearance as could be produced without sacrificing strength. The design is such as to provide for a possible third track. In one place, on the Charlestown bridge, the structure will be somewhat heavier, consisting of plate girders of a depth of 4 ft., braced against the posts longitudinally and transversely by large brackets.

The whole of the proposed road was shown on the map in our issue of July 2, 1897. The portion intended to be built at present is that extending from Dudley street, Roxbury, northwardly to Sullivan square, Charlestown, as shown herewith, Fig. 2. This distance is accomplished by two routes through the business portion of the city, which diverge at Castle street on Washington, one entering the subway at Pleasant street, the other turning east though Harrison avenue and Beach street to Atlantic avenue, and thence by Commercial and Causeway streets to the North Union station, where it joins the subway route and both pass over the new Charlestown bridge to Sullivan square, Charlestown.

The number of stations by each route (omitting the Adams square station in the subway, which may not be used by elevated trains,) will be eleven, including the two terminals, dividing the distance of about 5¾ miles into ten stages averaging .57 mile each. The number of new station buildings required is twelve, of which all but one are on the Atlantic avenue route, the exception being at the Pleasant street entrance to the subway. These, with the distances of each from the preceding, in miles, are as follows:

Washington and Dudley streets (Roxbury terminal.)	
Washington and Northampton streets	.67
Washington and Dover streets	.78
Tremont and Pleasant streets	.45
Harrison avenue and Beach street (from Dover street)	.62
Atlantic avenue and Summer street (South Terminal station)	.28
Atlantic avenue and Broad street (B., R. B. & L. station)	.48
Atlantic avenue and State street	.20
Commercial and Hanover streets (North Ferry to East Boston)	.48
Causeway and Canal streets (North Terminal station)	.58
Charlestown, City Square	.57
Charlestown, Sullivan Square (Charlestown Terminal	1.08
	.56

The stations in the subway average a quarter of a mile apart. All the new station buildings will be above the street level, except that at Pleasant street, which will be a new subway station, and will be built by the Boston Transit Commission. The present incline for the surface tracks at that point will be discarded, and the tracks carried under Pleasant street (this part of the work also to be done by the Boston Transit Commission), on the south side of which they will ascend on a five per cent. grade, taking a strip of private property for that purpose, and crossing the Boston & Albany tracks to Castle street, down which they then turn to Washington. Surface cars will then no longer use the Tremont street branch of the subway south of Boylston street, and, in fact, as explained in our previous article, two of the subway tracks from end to end will be reserved exclusively for the elevated trains. According to present arrangements, then, no surface cars will pass through the whole of the north-and-south portion of the subway, but they will use only the portion south of Park street opening at Boylston street, and that north of Cornhill; in each of these portions they will enter, turn by a loop, and return as they came.

The Atlantic avenue branch, turning east from Castle street, will run over private property between Washington street and Harrison avenue, taking the whole north side of Motte street.

The elevated stations wherever practicable will be of the intertrack type shown in Fig. 3, the entrance and the exit being in every case kept separate, and both being in the center of the street, and between the surface tracks which run immediately under the elevated tracks and diverge at the stations to allow between them the stairways and a platform to be used for the surface tracks. Where this type of station cannot be used, as at the two terminals, the exterior type will be adopted. All the stations will be made of steel, fireproof, sheathed with copper and made quite ornamental. The platforms will be of wood.

There will be cross-overs and storage tracks at the Sumner street and Causeway street stations, opposite the steam railroad terminals, and at Causeway street a covered bridge will connect the elevated direct with the Union station. The Boston, Revere Beach & Lynn station on Atlantic avenue will be similarly connected with the elevated road.

Fig. 5.—Boston Elevated Railroad—Roxbury Terminal Station.

"third-rail" electric conductor is to be adopted, and the third rail will be laid on the sidewalk side of each track.

The cars will be of substantially the same weight, size and construction as those of the Manhattan of New York and the Metropolitan West Side Line of Chicago, weighing 33,000 lbs. each, without motors. They are 47 ft. 4 in. long over buffers. The motors will add at least three or four tons to the weight of the car and much more than that if "locomotive cars" are used. The elevated structure is designed for cars weighing 50 tons each. These cars will probably be run in trains of three to five cars each, the station platforms providing for five-car trains. The motors have not yet been fully determined on, but will be either the "multiple-unit system," consisting of one or more motors under each car, all controlled from the front of the train, or the "locomotive car system," consisting of a single motor car located at the front and controlled from either end; the body of the car in this case to be used as a smoker. In either case there will be no reversing of trains, as there are loops at both terminals.

It has never before happened in any city that all the elevated and all the surface street railroads were brought together under one management. This arrangement deprives the public of the benefits of competition, but instead of having two lines both trying to do the same work with only mediocre success, Boston will have a system, the parts of which are specially designed to supplement each other at all points. The elevated road, therefore, is intended exclusively for express traffic between the center of the city and the suburbs. At every station free transfers will be given and connections made with the surface cars, which will convey passengers to points not reached by the elevated, or nearer to their destinations than they could go on the elevated. The surface cars will run directly beneath the elevated throughout the greater part of the line.

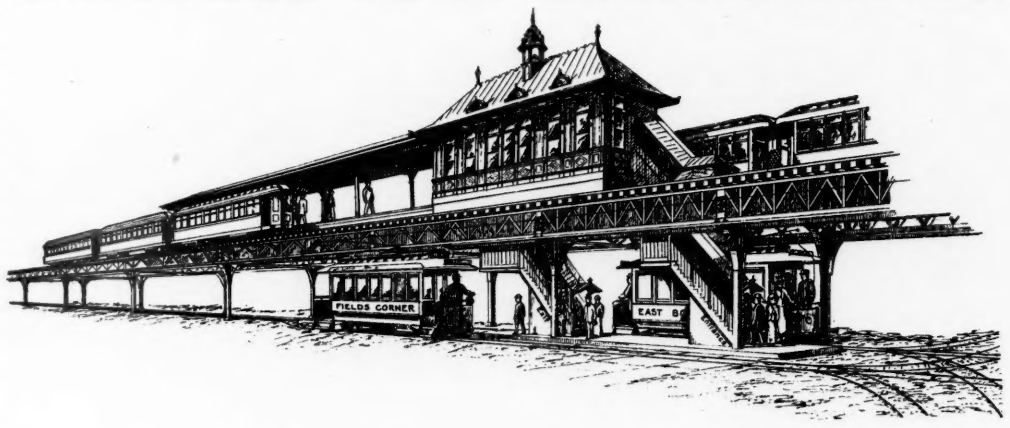


Fig. 3.—Typical Station for Boston Elevated Railroad.

At the Causeway street station the Atlantic avenue route will be joined by the tracks issuing from the subway. Car houses will be built adjoining the loop at each terminal of the road, and will be built as a second story to those now used by the surface cars of the company.

The track will be made of 90 lb. T rails laid on 6 in. x 8 in. sawed ties, with wooden guard rails. The

Fig. 4.—Boston Elevated Railroad—Roxbury Terminal.

Thus any person, for the single fare of five cents, may pass fron one point to any other on the company's lines by whatever route to him seems best.

At the elevated terminal stations the surface cars will meet the elevated on the same level, the former passing up inclines from the street to the elevated platform. The Roxbury terminal station and loop (Figs. 4 and 5) will occupy the greater part of a block of private property, bounded by Warren, Washington and Dudley streets and intersected by Zeigler street. This will be a two-story station, the lower portion for surface cars and the upper portion for surface and elevated cars, the tracks of which are brought to the same level, 14 ft., above the ground. Here the surface cars, after passing up the inclines, continue on around the loops provided for them, and down to the surface again; and the level of the tracks at the top of the inclines is made as low as possible, in order to facilitate the ascension of the surface cars. It is also to be observed that travel from the two directions, Washington and Warren streets, is kept separate each on its own side of the station, each having its own incline and loop for surface cars. This station will be about 700 ft. long and 125 ft. wide.

At the Charlestown terminal (Fig. 6) the arrangements will be somewhat different. The surface cars will run up on inclines to the level of the elevated cars, as before, and the two sides of the station will be divided between the Malden, Everett and Woodlawn cars on the north and the Somerville and Medford cars on the south side. Instead of loops, however, there will be four stub tracks on each side, each side having a capacity of 13 cars. This station will be on private property and will be 175 ft. long and 150 ft. wide. Immediately below the elevated platforms will be platforms for those surface lines which do not use the inclines, as at the Roxbury terminal.

City square, Charlestown, will be an important junction, where connection will be made with surface lines for Chelsea and Lynn. At Dover street similar connection is made with cars for South Boston and Cambridge. The State street station, although so near others on each side of it, is deemed necessary for the great mercantile and market districts.

The running time between the Roxbury and Charlestown terminals is expected to be 22 minutes, including stops (for which 10 seconds each is allowed), an average of nearly 16 miles an hour, whereas the average on the Manhattan system in New York is about 12. The schedule time of the surface cars is 50 minutes, and the actual time is said to be frequently 50 per cent. greater. In the subway the elevated trains will make about 10 miles an hour (with four stops to the mile), whereas the surface cars in the subway average 8½. The maximum speed to be attained on the elevated will be from 22 to 30 miles an hour, depending on the character of the motors, not yet determined on. The actual distance between the two terminals is 5.02 miles by the subway and 5.70 miles by the Atlantic avenue route, but the calculated running time is practically the same, the number of stops being the same in each case.

The surface cars from Roxbury now accommodate

Fig. 6.—Boston Elevated Railroad—Charlestown Terminal.

6,000 passengers during the busiest hour of the day, and this amount for the elevated is expected from the start.

A preliminary estimate of the cost of construction of the elevated structure and stations is $400,000 a mile, or about $2,800,000 for the seven miles of track now planned for, exclusive of real estate and equipment.

All the plans and estimates have been made under the direction of Mr. Geo. A. Kimball, civil engineeer, who has entire charge of this portion of the work. Much time has been devoted to making the plans as perfect as possible, in order to meet all possible objectors before the Railroad Commissioners.

The company has issued $10,000,000 of stock as a

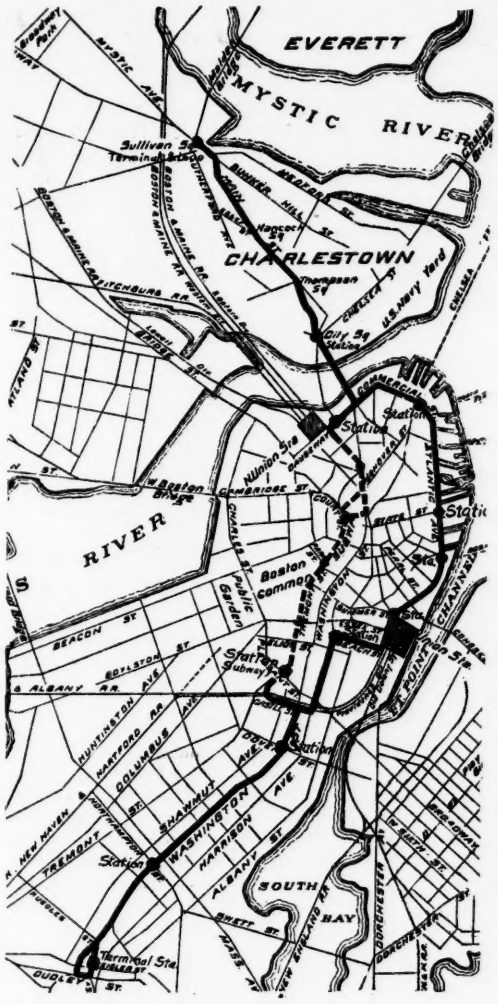


Fig. 2.—Part of Boston, Showing Line of Boston Elevated Railroad.

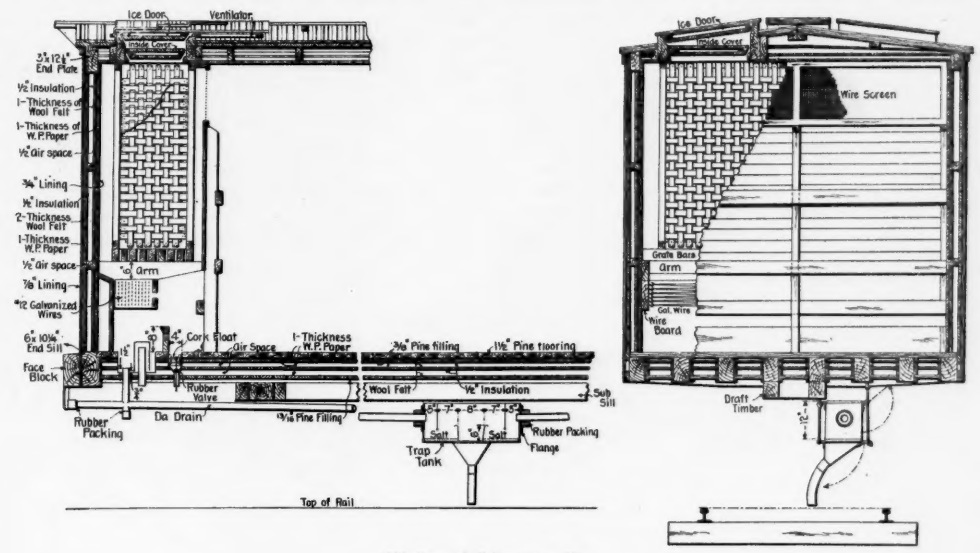
starting fund. This is not expected to cover the Cambridge and South Boston branches. It is expected that authorization of $5,000,000 more will be applied for when these branches are started, making a total issue of $15,000,000, although the legal limit is $20,000,000. The stock is required by law to be paid for at par, and more than half of the amount ($54 a share) has been already paid in. Financially, therefore, the company is very strong. The officers expect to begin building as soon as they have the necessary approvals, and to have the road in operation within one year from the start.

The Wickes Refrigerator Car.

The Wickes Refrigerator Car Co., Buffalo, N. Y., has now adopted as standard several important modifications in its refrigerator cars after a trial in actual service of several years. The first Wickes patents were issued in 1880, and since this time improvements have been made at frequent intervals with a view to reducing the dead weight and increasing the strength and capacity of the cars; in all about 10,000 refrigerator cars have been built under these patents.

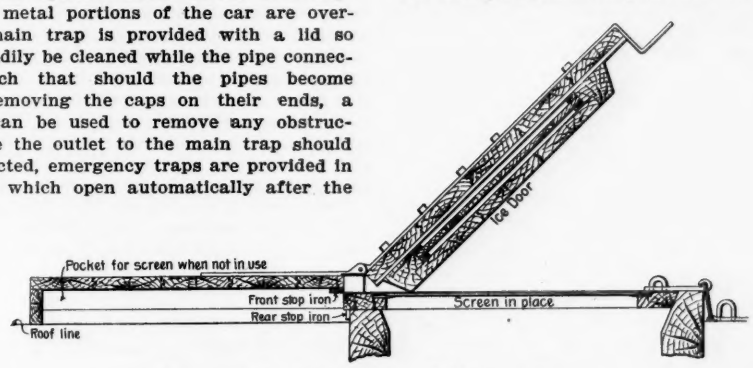
The main features of the latest cars are shown in the engravings, and relate especially to the means employed for cooling, ventilating and draining, no changes of consequence having lately been made in the construction of the car body proper. In the Wickes system, the ice is placed in two tanks at each end, 3 ft. 7 in. long, 2 ft. 2 in. wide by 5 ft. 2 in. deep, built up of an oak framework on the inside of which are nailed interwoven strips of galvanized iron 2 in. wide and 1 in. apart. From these strips small metal shelves project. The tanks permit the free passage of air around the ice and the exposed surface of metal in the tank is about 400 sq. ft., upon which the moisture in the descending air is condensed and collected. The tanks are mounted on oak gratings, and surrounded by a wooden jacket, starting 20 in. from the ceiling, thus forming an opening at the top into the main provision chamber; a similar opening is provided near the floor.

The principal requisite for a refrigerator car is that the air be kept as pure as possible, this being more important than extremely low temperatures. The wet surfaces of the ice and tank absorb the impurities in the air, and to make the area of wet surface exposed as large as possible, many rows of galvanized iron wire are strung diagonally beneath the tanks, upon which the drippings fall. The air entering at the top of the ice compartment is cooled and in passing down circulates through and around the ice tank and out through the wires at the bottom, depositing the impurities and being cooled and dried during its passage to the provision chamber. In this way a continuous circulation is maintained so long as ice remains in the tanks.



Wickes Refrigerator Car.

The arrangement of traps for carrying off the water are shown in the drawings. A drain pipe 2½ in. in diameter is provided, running from the drip pans to a trap located near the center and beneath the car, while the overflow is discharged through a rubber outlet extending to within a few inches of the ground and between the rails. In this way the brine does not reach the trucks and rails, and so the injurious effects of the tank drippings on the metal portions of the car are overcome. The main trap is provided with a lid so that it can readily be cleaned while the pipe connections are such that should the pipes become clogged, by removing the caps on their ends, a straight rod can be used to remove any obstructions. In case the outlet to the main trap should become obstructed, emergency traps are provided in the drip pans which open automatically after the water reaches a certain level. These traps work by a cork float. Automatic floor drains are provided to prevent the accumulation of water on the car floor.



Permanent Ventilator—Wickes Refrigerator Car.

The ventilators, as shown, consist of wire screens which fit the opening in the roof through which ice is admitted. When the screens are in place they hold the ice doors open, and when not in use the screens are stored in a pocket directly back of the ice door.

A Modern Coal Dock.*

The harbors of Duluth and the Superiors are among the most important on the inland seas. The largest part of the enormous grain crops of Minnesota, the two Dakotas and some parts of Iowa are brought there to be stored in elevators and shipped East. The iron ore that passes through these cities amounts to millions of tons a year. Lumber ranks among the great commodities in quantity shipped. Grain, iron ore and lumber make up a large part of the down freight. Coal, oil and miscellaneous packages, such as heavy manufactured articles, are the substance of what is carried up.

Each of the above commodities requires a distinct form of dock. Elevators, built on the wharves, are used for grain, long docks with pockets and overhead railroads for ore, for lumber a large flat area with tracks in the spaces between the piles is necessary. For miscellaneous freight they have the common storehouse that can be seen in any shipping town. For coal there are many varieties designed to load and unload the coal in the quickest and cheapest way possible.

*By Edward N. Saunders, Jr., in the Yale Scientific Monthly.

The dock of the Northwestern Coal Railway Company at Superior, Wisconsin, is by far the largest on the lakes, and, in fact, in the country. It was built with the object of reducing the cost of handling and distributing coal to the railroads that have terminals there. These railroads carry coal to all parts of the North and Middle West. This dock is used by a concern that formerly had its business scattered over five smaller ones, anywhere from one-half to four miles apart. Each dock was connected with a separate railroad, which could, therefore, demand its own terms for switching. They are now able to do their own handling of cars and switching and demand pay from the railroads.

The dock is 3,000 feet long and 500 feet wide, and has a frontage for unloading boats of 1,500 feet. The rest of the distance is taken up by a freight yard for handling cars in and out. There are sufficient tracks to accommodate 200 to 250 cars a day. The site where the coal is piled is 1,400 feet long and 400 feet wide, and is capable of holding 400,000 tons. One million tons are easily handled over the dock in a year.

The structure stands on piles and cribs driven and sunk in the sand bottom, which is from five to three feet below the surface. The whole foundation was filled with sand pumped in by the hydraulic dredge used to dig the channels and slips about it. All the work was done by the company; no contracts were let. A hydraulic dredge was purchased, and work done for little over one-half the sum required by dredging companies.

The cribs are filled with rock and sand and form a bed for the floor and superstructure. The power house, situated at the outer end of the dock, is supplied with six 120 horse-power boilers, a steam pump for fire purposes and two Buckeye engines of 250 and 125 horse-power respectively. They transmit power to the main shaft by rope-driving. One-piece belts were tried, but the rope proved more efficient and much cheaper to replace.

The shaft, along the edge of the dock, is 950 feet long. The forty-four hoists and conveyors are run by it. Its great length has never given any trouble, and the small engines stationed at short intervals, the plan generally adopted in cases of this kind, are entirely done away with. In this manner running expenses are greatly reduced, since only two or three engineers are needed and the coal consumed is less.

The superstructure consists of forty-four tramways erected at intervals of twenty-four feet. The first forty, which extend for 1,000 feet, are built of wood. They consist of a hoisting tower at the dock front about 50 feet high and a trestle of frame work 475 feet long and 25 feet high. It supports a wire rope that carries the baskets of coal from the tower to the

(Continued on page 296.)

RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

We are indebted to Dr. Walter E. Weyl, of the University of Pennsylvania, for calling our attention to the fact that in noting the effect of the reduction of fares on French passenger traffic recently we neglected to take into account the reduction in the Government tax on fares which took place at the same time, and which made the reduction in the money paid by the passengers for their tickets 21 per cent. instead of 12 per cent., which was the reduction in the average fares received by the companies. This makes the comparatively small growth in passenger travel so much the more notable. There is little doubt that the railroads' profits would have been greater if fares had remained as they were, and there had been no changes in other respects; but it is questionable if they would have been very much greater. And though the privileges of the French companies are strictly secured to them by their charters, they are nevertheless so affected by public opinion and the legislative power that they find it politic at times to submit to popular demands, which occasion some loss in profits, lest a worse thing befall them; somewhat as our politicians sometimes (but rarely) find it expedient to "pander to the moral sense of the community." The data now on hand do not afford material for any close calculation of the effect of reduction of fares in France; but as fares were formerly higher than in the other principal European countries, it is not probable that they could have been maintained permanently, and as the companies' profits have increased of late, the change in fares is likely to be considered by the public as an advantage to the railroads, though their greater profits have been made not because of, but in spite of that change.

From an examination of the figures of the cost of recent freight cars we find that the 50-ton, all-steel cars and the 30-ton wooden cars cost almost exactly the same per ton of carrying capacity. Or, stated another way, you can buy all-steel cars to carry your tonnage for exactly the same money that it would cost you to buy wooden cars of smaller capacity to carry the same tonnage. This is the first cost. The question of interest account, therefore, disappears, but further, it may well happen that to carry the same tonnage you will need more wooden cars, inasmuch as a larger percentage of your stock is out of service for repairs; so the original investment and of course the interest account would be greater with the 60,000-lb. wooden car than with the 100,000-lb. all-steel car. If the comparative interest account is taken out we have left the comparative cost of maintenance and the life. Concerning these it is not necessary now to express any opinion. The cost of maintenance of an all-steel car can be estimated with more safety a year or two from now than to-day, but of course it will take a good many years to arrive at any safe estimate of its life. Beyond all this, and considerably more important than interest and maintenance and life, is the operating question of train expenses and train earnings. Last week we mentioned the great train-mile earnings which the Pittsburgh, Bessemer & Lake Erie is able to make with its 50-ton steel cars. It is easy enough to see that a considerable increase in net earnings per train mile would make any question of interest or cost of maintenance quite insignificant. Naturally, this is to a considerable degree a special question, as the possibility of maximum use of cars of great capacity depends considerably upon the kind of traffic. As we said last week, this whole matter is one of the most interesting subjects now before the responsible officers of the railroads, and that a good many of them appreciate its importance is evident enough from their interest in the study of cars of great capacity, and in the orders that have been already placed.

What is a car coupler?—At the March meeting of the Western Railway Club Mr. Waitt asked for a definition of the term coupler. "Does it mean the body or the coupler bar or the knuckle?" He says that the word is used in two or three different ways in the Rules of Interchange. Mr. Rhodes said that he understood the term "coupler" to include the whole affair, drawbar and knuckle and all parts in the complete coupler, and he suggested that a good definition would be that the coupler is made of the drawbar, knuckle and various parts, and that when reference is made to the other parts of the combination the name of the individual parts, such as drawbar or locking pin, should be used. Mr. Waitt finally moved that the club recommend adding a note after Section 43 of Rule 3 of the Rules of Interchange, thus: "The word 'coupler' in the above Sections 35 to 43 inclusive, means either coupler body or knuckle." This motion was carried. This, however, does not seem to answer the question which was raised as to what the term coupler really means, and it strikes us that Mr. Rhodes' definition is a good one, that it means the whole assemblage and is made up of different parts. We would suggest, however, that Mr. Rhodes is something of an offender himself in the use of the word "drawbar," or at least has been; but perhaps he has reformed his practice. For some years we have been struck by the fact that in his club discussions he uses the word "drawbar" when he means that which he would now call in his definition a coupler; that is, when he means to include the whole apparatus. It is true, however, that he is one of a big company, for we venture to say that the majority of the mechanical officers who discuss these subjects, particularly in their verbal discussions, say drawbar oftener than they say coupler. It has been our practice for some years to use the word coupler as covering the assemblage of parts in the M. C. B. coupler and to speak of the special parts by definite names, as knuckle, locking pin, coupler body or drawbar, etc., and we have tried to confine drawbar (used as the name of the complete apparatus) to the link-and-pin coupler. Obviously, however, we cannot always do this, as, for instance, when talking about the height of drawbars.

The Swiss railroads do not fall into the hands of the State immediately. For a few lines of one of the five companies notice of the purchase was to be given Feb. 25 last; for the Gothard Railroad as late as 1904, and the actual transfers are to be May 1, 1903, for three of the companies and most of the lines of a fourth, and for the Gothard Railroad May 1, 1909. In the case of the latter company there must be negotiations with Germany and Italy, which, in accordance with the contract by which they subsidized this company, are entitled to shares of the profits when the dividends exceed 7 per cent., which is already the case. The law recently approved provides for the purchase of only about two-thirds of the mileage of one of the companies, including the most productive lines. This was because the other lines were estimated to cost enormously more than they are worth. If the lines had all been built under one charter, the Government doubtless could not have made such a selection; but in Switzerland as elsewhere the existing companies have been formed chiefly by the consolidation of several old companies, and the State is bound only by the contract which it has actually made. These require it to pay not less than the actual cost of the lines. In this country almost every large system includes lines which earn nothing like the interest on their cost, and frequently have no net earnings whatever, and are valuable only for the traffic they bring to the main lines. In many, perhaps most cases here, the companies which now own them acquired them at foreclosure sales, etc., at a fraction of their actual cost; but under the Swiss law the State could not require the company owning such lines to sell them for less than their cost to the company which built them. By taking the rest of the company's system, however, the State may leave those worth nothing whatever to the company working them. In the case of the Swiss company it would seem to have no other course than to sell these lines to the State on the best terms it can get, there being no other possible customer.

In the nationalization of the Prussian railroads, parties were much divided; and though the socialists favored it on principle, the nation at large scarcely considered it as a socialistic measure. In Switzerland this view seems much more prominent, and socialist journals declare that this is only the first of a series of movements which are to bring national industries and interests into the hands of the State. The next step, says one, is to be the nationalization of the Swiss breadstuffs supply. There is a strong socialist party in Switzerland, but there is also a strong conservative feeling. A considerable number of ultra-conservatives are said to have voted for the State railroad system.

The Russian Petroleum Industry.

The United States Consul at Batum, the western terminus of the railroad between the Caspian and the Black Sea, and the chief shipping port for petroleum exported from Russia, has made a very interesting and complete report on the Russian petroleum trade last year, from which it appears that the average daily production last year was 138,897 barrels, against 126,644 barrels in 1896—an increase of 10 per cent. The crude oil is nearly all refined there, where the output was, in gallons:

	1897.	1898.	Increase.
Illuminating	458,035,000	404,800,000	53,235,000
Lubricating	45,860,000	33,740,000	12,120,000
Residuum	1,127,100,000	901,825,000	225,275,000
Crude	130,045,000	75,165,000	54,880,000
Other products	5,925,000	5,315,000	610,000
Total	1,766,965,000	1,420,865,000	346,100,000

This gives an increase of 24 per cent. in "output," against an increase of only 10 per cent. in the production of the wells—a difference which we are not able to explain, in spite of a decrease of some 40,000,000 gallons in the stocks of crude on hand. The "crude" in the "output" is doubtless the shipments of crude, consumed in that condition for fuel. The increase in residuum appears to have been 25 per cent., while the increase in refined (illuminating and lubricating oils together) was but 15 per cent. This was because the price of oil was very low during the year and the price of residuum very high, making it unprofitable to distil the crude so completely as heretofore. At best the Russian crude oil is heavy, and affords a much smaller proportion of illuminating oil than American petroleum; as we see here, there were but 28 gallons illuminating oil and 2.8 gallons of lubricating to 69.2 gallons of residuum.

The residuum is much more valuable in Russia, especially in that part of Russia, than it would be here; for the country lacks fuel, and petroleum residuum has become almost the sole fuel on the Caspian and Volga steamboats and is very largely used on the locomotives, not alone near the wells, but even in Western Russia. The residuum output last year was in weight about 3,600,000 long tons, and though pound for pound more effective than yet would make an unimportant figure in the fuel supply of a country like this, and especially of the territory where our petroleum is produced, which is full of coal. Mr. Chambers, the Consul, gives the price of residuum at Baku last year as ranging from about 34 to 42 cents a barrel, which is about $2.38 to $2.94 per long ton.

Russia is supplied with petroleum chiefly by shipments up the River Volga. The exports to other countries pass over the Trans-Caucasian Railroad 560 miles from Baku to the Black Sea at Batum, whence they may go by sea to any part of the world. Thus the wells are little further from a seaport than our petroleum wells. Mr. Chambers reports the Batum shipments to the several countries for the last two years. The total amounted to 333 million gallons last year, against 238 millions in 1896—an increase of 40 per cent. Only about one-thirtieth of this last year was crude and residuum. Though this is a very direct route to Southern Russia and by far the most direct to all Black Sea ports, only 33 million gallons of the Batum shipments went to Russia last year. The other 300 millions was widely

scattered, but the bulk of it went to countries bordering on the Mediterranean or to the Orient through the Suez Canal. These shipments to India, China, Japan, etc., passing through the Suez Canal were 120,000,000 gallons; those to the Mediterranean and Danubian countries, 105,000,000, leaving but 75,000,000 to North European countries, or just one-fourth of the Batum exports. This seems natural, as the Mediterranean countries are much nearer the Russian oil field. From Batum the distance to Liverpool is quite as great as from New York; and freights, doubtless, are higher from Batum.

In an article so crude, freights everywhere form a large part of the cost to the consumer. Mr. Chambers' report estimates the average cost of production of crude oil at the Baku wells as low as 17 cents per barrel, though it is not usually sold for less than 32 cents. As about 70 per cent. of the oil is refined by the owners of wells, the market price of crude does not cut much of a figure. At 17 cents and current prices for residuum, refined oil is estimated to cost 0.2 cent per gallon with crude at 17 cents per barrel and 1.4 cents with crude at 32 cents—say 2.8 cents and 19.8 cents per 100 lbs. Very moderate rates for considerable distances may easily double, treble or quadruple this cost to the consumer and still leave it very low. The cost of packages and other accessories may easily exceed the cost of the oil at the refinery.

The very low prices of refined oil last year caused the refiners to demand lower freights on the railroad from Baku to Batum. The regular rate over the 560 miles of railroad is 19 kopeks per pood—26⅔ cents per 100 lbs. Once before with the avowed object of establishing a foreign market in the face of American competition, the rate on refined oil for export had been reduced nearly one-half, to 10 kopeks, with the result that the price of American petroleum in European markets was so reduced as to make the business more than ever unprofitable to the Russian exporters. The reduction in railroad freights, though nearly one-half, amounted to only 0.9 cent per gallon, and it is easy to overcome this, especially in a perfectly organized business, like the American petroleum trade. Notwithstanding the failure of this experiment, the Russian Government, after some delay, met the wishes of the Baku refiners, and reduced the freight on exports from 19 to 12 kopeks per pood, beginning Dec. 15 last, as we have noted heretofore. This is a reduction of 0.7 cent per gallon, approximately, and if this causes the loss of a sale of American petroleum, we are mistaken in the Standard Oil Company. It will most probably have substantially no effect on Russian exports or the prices of oil, either Russian or American, but will be so much more money in the pockets of the Russian refiners. (We think we have heard of something of the kind on this side of the ocean.)

The shipments to Batum last year at 19 kopeks per pood must have brought the Trans-Caucasian Railroad about $6,300,000, or $11,250 per mile for this freight alone. The difference between this and 12 kopeks on the exports (about 60,000,000 poods) would be more than $2,300,000, which will be gladly received, whether it be the Russian refiners or the non-Russian consumers who get it.

It was long ago determined to relieve this railroad of the heavy petroleum traffic by laying an 8-in. pipe line (for refined oil) along it. For the benefit of Russian industry it was desired to have the pipe made in the empire. There being few iron works and no pipe mill in Russia, a contract was made with a Russian-American company to establish such a mill on the sea of Azof, near the coal mines of the River Don, and supply a large part of the pipe. It was announced that this line would be open for 415 of the 560 miles from Baku to Batum by last September, but our Consul at Batum says that work on the line had not been begun at the end of 1897, presumably because of the inability of the Russian-American company to make pipe that would pass inspection. The company imported its machinery and a number of skilled workmen from this country, and actually turned out some pipe as early as February, 1897. Recent Tiflis newspapers report that work on the line has now actually begun; but it is not likely to pass much oil this year. This line will doubtless reduce the cost of exporting the Russian oil, but it is doubtful if it reduces the price to the consumer.

Although the production of the Baku oil field has increased constantly and quite rapidly, Mr. Chambers' report indicates that the field has been pretty thoroughly explored, that it is limited, with little present prospect of new productive territory, and that the production is now more costly than formerly—that is, that more new wells turn out dry or small producers. The work of development has been prosecuted very rapidly. The number of wells producing was 657 last year, against 560 in 1896. Drilling was begun on 303 new wells in 1897, against 210 the year before. The avereage daily product of the wells completed fell from 892 to 813 barrels. The development, in spite of low prices of oil, is encouraged by very high prices for wells, and land, which apparently bear little proportion to the product or the profit. The London promoter has got scent of the Baku oil fields; he may pay two prices for wells; but as he puts them on the market capitalized at perhaps three times what they cost him, he finds them very productive for him. And this business goes on in spite of the fact that the Rusian law makes it impossible for a foreigner or a Jew to get a title to oil property without special permission in each case of the Governor-General and two Cabinet Ministers, in lieu of which the purchases are said to be actually held in the name of Russian subjects.

The report on coal production in the United States in 1897 by the statistician of the Geological Survey gives the total as 198,256,788 short tons; or reduced to the long tons, which are the most general standard of the trade, 177,014,989 tons. This is much greater that the British production, which not more than 20 years ago was thrice as great as ours. It is not yet generally realized to what extent our marvelous industrial progress has been due to the development of our coal mines. More than three-fourths of the entire production of this country is in the four States Pennsylvania, Illinois, West Virginia and Ohio, and more than half of it (53½ per cent.) in Pennsylvania alone. Next to Ohio, with 12,200,000 short tons, comes at a long distance Alabama, with 5,900,000. While it is the large producers of coal which to a considerable extent determine the location of important industries, the more scanty supplies scattered over a large portion of our territory are an important element in their welfare. In the great, treeless prairie regions west of the Mississippi agriculture would be at a great disadvantage without the coal of Iowa, Kansas and Wyoming, and the lack of coal has had much to do with the comparatively slow growth of California. Of the States west of the Mississippi, Iowa is much the largest producer, with 4,915,000 tons last year. Nebraska, Minnesota and the Dakotas produced very little. (There is a good deal of lignite west of the Missouri in North Dakota, which is of very great value to the settlers there.). Kansas, Missouri and Wyoming produce each about the same quantity (2,694,000 to 2,483,000 tons); Colorado, 3,303,000; the Indian Territory half as much as Kansas, nearly all carried out of the Territory; Montana, New Mexico and Utah are producers, and then there is a great blank to the west until we reach the Puget Sound district in Washington, which turned out 1,434,000 tons last year. A trifle is produced in Oregon and California; but the coal resources of the whole North Pacific coast are substantially confined to the Puget Sound district, which includes the important mines of Vancouver; and, judging by this, we may look for a special industrial development in course of time in that vicinity.

As an illustration of the effects of modern industry in concentrating population, made possible only through the railroad, the Austrian economist, Baron zu Weichs, cites the changes in Austria from 1843 to 1890. In these 47 years the total population increased 6,822,000, or 40 per cent., from 17,073,000, to 23,895,000. Of this increase 2,275,000 was in 46,713 towns of 2,000 inhabitants or less, and 2,150,000 was in 7 cities of more than 20,000 inhabitants. In the country the increase was 16 per cent.; in the cities 298 per cent. The increase in the towns of 2,000 to 10,000 inhabitants was 78 per cent. and in those of 10,000 to 20,000, 248 per cent. Yet Austria is still comparatively backward in its industrial development and 67½ per cent, of its population in 1890 was rural—that is, in towns of less than 2,000 inhabitants, which, however, had 81 per cent. of the population in 1843. The tendency in this direction here has been long noted and by many lamented; but it is not so generally known that the course has been similar in old countries. It has been inevitable; at least it has been a necessary condition of the growth in population. That the rural population has been abundant is proved by the abundance of the supply of agricultural produce.

It seems that some shipments of wheat have actually been made from Western Siberia to Austria. The charges on it are said to have been: Freight to Austrian border, 72 cents per bushel; freight from border to Vienna, 11.1 cents; Austrian duty, 19.6 cents; total, $1.02⅔. The wheat was worth $1.31 in Vienna at the time, which left 28⅓ cents per bushel for the Siberian producer and the reward of the Siberian Leiter who undertook the business. In ordinary years sending wheat from Siberia to Austria would be something like sending it to Chicago, for Hungary, close by, has usually a great surplus to market. Last summer, however, the harvest was wretched there and in Austria.

NEW PUBLICATIONS.

Economic Aspects of Railroad Receiverships. By Henry H. Swain, Ph. D. New York: The Macmillan Company, April, 1898. Price, 50 cents.

This volume is No. 2 of Volume III of Economic Studies published by the Macmillan Company in New York and Swan, Sonnenschein & Co. in London for the American Economic Association. Dr. Swain has done a real service by his careful compilation of the nature, history and effects of railroad receiverships. His little volume of 160 pages is only in small degree matter of opinion, but mostly a record of history, and therein is its value.

The first chapter treats of the nature of receiverships and the functions of receivers. The leading principles of the ordinary receivership "were established more than half a century before the beginning of railroad construction," but very early in the history of railroads receiverships began. A famous one, for instance, was that of the Vermont Central, which began in 1855, but the new conditions involved in the railroad receiverships necessitated a considerable body of new law and practice, which so far has been rather a growth from the courts than the result of legislation. A useful synopsis is given of the comparatively meagre statute law on the subject of receiverships in the various states and territories. Of these the Texas statute of 1889 is the most extensive piece of legislation on the subject, and it is so severe that "the law has not encouraged railroad bondholders to seek receiverships in Texas courts of late." A striking feature of the South Carolina law (1893) is that it makes the receiver personally liable for the taxes of the railroad.

The second chapter deals with the history and statistics of railroad receiverships in the United States. In the last 25 years more than 700 railroad companies, with a mileage exceeding 100,000 miles, have been put into receiverships. Two tables are given, one showing the number of companies, the miles put into receiverships, the total mileage and percentage in receivership each year, beginning with 1870 and coming down to 1897. In that period the greatest number of companies put into the hands of receivers was in 1893, being 132, and the mileage was 27,570, being 15.51 per cent. of the total railroad mileage of the United States. In no other year was one-half this percentage put into the hands of receivers, except in 1875, when the percentage rose to 9.91. In 1897 the mileage which was turned over to receivers was 1,536, or 0.83 per cent. of the total of the United States.

The other table shows the number and mileage of railroads actually in the hands of receivers on the first day of certain months named. Those months are January and July from 1872 to 1888, inclusive. Then, from January, 1889, down to January, 1898, each month is given. Jan. 1, 1872, the mileage in the hands of receivers was 1.56 per cent. of the total in the United States. This rose to 15.37 per cent. July 1, 1875, and reached a maximum of 18.19 per cent. Jan. 1, 1877. Then it declined to a minimum of 1.83 per cent. July 1, 1883. Another maximum occurred Jan. 1, 1886, when the percentage had risen to 12.41, and the next minimum point is found Dec. 1, 1891, namely, 4.02 per cent. In 1892 and the first part of 1893 the increase in receiverships was not great, but it jumped from 6.8 per cent. August, 1893, to 15.42 per cent. December of the same year, and this phase reached its maximum April 1, 1894, when 20.6 per cent. of the railroad mileage of the United States was in the hands of receivers. In miles this amounted to 36,619, and in number of companies to 210. The mileage and the percentage have both decreased since then, and we find on Jan. 1, 1898, that the percentage in the hands of receivers has gone down to 7.64, the mileage to 14,101 and the number of companies to 132. The reader will observe that these maximum points of the melancholy curve follow after the climaxes of the several business panics.

Dr. Swain undertakes to analyze his statistics with a view to ascertaining the most powerful causes of receiverships. The ground of application is usually the failure of the company to pay interest on its bonds, and it is significant to see that this failure to pay interest, as indicated by the receiverships, follows along in the line of general business prosperity or depression and does not seem to have much relation to the federal and state efforts at control. Except the culmination in receiverships reached after the great panic of 1893 the mileage of railroads put in the hands of receivers has never risen in any year since the passage of the Interstate Commerce act to the figures reached in 1875, in 1884 and in 1885, although the total mileage of the United States increased nearly 42 per cent. from 1884 to 1893, and more than 138 per cent. since 1875. The Interstate Commerce act became effective March 4, 1887. On the first of January preceding that the miles in the hands of receivers were 11,646, or 8.54 per cent. This amount declined with various fluctuations, going down as low as 6,768 miles, or 4.02 per cent., in December, 1891, and the road in receivers' hands did not reach 11,000 miles during all the period covered by the Interstate Commerce control until July, 1893. Of course the whole question is very complicated, but Dr. Swain seems disposed to lay the trouble to the account of over building more than to any other

one cause. He says "if so called over-production is to be held responsible for financial reverses in any line of enterprise there are certainly few fields in which it has been more active than in railroad construction."

The chapter on the Effects of Receiverships is an interesting and concise story of individual cases.

The final chapter is on the Future of Railroad Receiverships, and here some reforms are suggested. It is suggested that laws preventing consolidation should be repealed, that the Interstate Commerce Commission should have power to prescribe minimum rates between competitive points and that the states should restrict rather than encourage the building of new railroads. Furthermore, it is suggested that considerable legislation is required in the line of limiting causes for which a receiver may be appointed and the duration of receiverships, provision for the appointment of a proper person for receiver, definition of the power and duties of receivers, definition of the jurisdiction of different courts and receiverships, and finally the establishment of a federal bureau or commision charged with judicial powers to have exclusive charge of such railroad receiverships as might be brought under federal jurisdiction.

A Course in Mechanical Drawing. By John S. Reid, Instructor in Mechanical Drawing and Designing, Sibley College, Cornell University. Octavo, 128 pages, 168 figures. New York: John Wiley & Sons, 1898. Price $2.

After an experience as a practical draughtsman and teacher for over 15 years, Mr. Reid has produced this book for the reason that, "having tried and failed to find a book on the subject that was entirely suitable for his use as a text book, he has found it necessary to prepare the present work." He judges that the course laid out in this book contains all such statements and illustrations of principles as are necessary to fit a student to master the problems met in machine construction, and from looking over the volume we should say that he is right. It is a simple and compact and judicious presentation of the elements of mechanical drawing. The first chapter is on Instruments, in which the various tools required are described and shown by illustrations. A second chapter of 40 pages deals with the methods of construction of simple lines and figures which it is customary to give the beginner to teach him accuracy and quickness in the use of instruments, and to teach him also useful principles. This begins with bisecting a finite straight line, and ends with the construction of the cissoid and certain curves used in architectural mouldings. A short chapter shows conventional symbols for indicating various materials, etc. Another short chapter gives simple and sensible information and hints about lettering and figuring and some useful alphabets. The final chapter, and the longest, being 50 pages, is on Orthographic Projection, which, of course, deals with the eternal problems and principles of descriptive geometry, all simply and concisely developed.

A Railroad Map of England and Wales.—Messrs. W. & A. K. Johnston, 7 Hanover St., Edinburgh, issue a railroad map of England and Wales, 50x42 in., on a scale of 8 miles to an inch, which shows each railroad system in a particular color and by various symbols. Lines in progress are also given, and the canals appear in distinct blue lines. Altogether, the scale of the map is so large, the coloring and the symbols are so distinctive and the lettering so clear that it is a very available map—easily read and yet full in detail, so far as towns, railroads and canals go. The topography is not indicated, except that streams are shown; and, indeed, for the purposes of the map it is better without the topography. It is sold for 10 shillings, either folded in a case or mounted on rollers, and backed on cloth. On the same sheet are eight insets, showing several of the most important towns and their neighborhoods on a larger scale than the body of the map.

The same house issues a special map to illustrate the Chinese question, showing Northeastern China from about latitude 15 to 42 and longitude 105 to 150 (including, of course, Japan). On the same sheet is a special map to larger scale showing Peking, the Gulf of Pechili, Port Arthur, etc. This is sold for one shilling on paper, or for two shillings on cloth, folded in a case.

The John Crerar Library (Chicago). Third Annual Report for the year 1897. Pamphlet, 29 pages.

Although this report just issued at Chicago is the third annual report, it is in fact the first since the opening of the library to the public, one year ago. This library is a scientific reference library only, and the report shows that the visitors are drawn from all sections of the city. During the year 1897, 18,000 volumes were added to the library and orders are outstandi g for 6,000 volumes more. There are now available for public use 29,000 volumes and 1,300 current periodicals. The library rooms are open from 9 a. m. to 10 p. m. on six days each week, visitors and students averaging from 80 to 90 a day. Two card catalogues are open to the public, one an alphabetical catalogue of authors and one a classed subject catalogue, to which it is proposed to add an alphabetical subject catalogue. There were 6,995 books drawn from the stacks by readers and 3,864 periodicals, but as there are 1,500 volumes on the reference shelves of which no record is kept and only two readers out of five were found to draw books or periodicals by call slips or enter the stack rooms, it is estimated that in the nine months of 1897 after the library opened at least 30,000 books and periodicals have been consulted. Of the books used on call slips about one-third were on applied science, and of the periodicals about one-half, the rest of the call slips for books and periodicals being divided between the departments of social, physical and natural science and general works.

TRADE CATALOGUES.

Recent Locomotives.—The Baldwin Locomotive Works has begun the issue of a set of pamphlets (of which Nos. 1, 2 and 3 have appeared) which will be uncommonly valuable records. These are entitled "A Record of Recent Construction." They are half-tone pictures of locomotives with, on a facing page, the catalogue classification, special name and general dimensions of each locomotive shown. We discover in this record locomotives for Russia, Brazil, Japan, Norway, Guatemala, United States of Colombia, West Australia and Cape Colony. The next number of the Record will probably show locomotives for Egypt and Spain.

Draft Rigging.—The Thornburgh Coupler Attachments Co., Detroit, has issued a new catalogue, illustrating the Thornburgh malleable iron draft rigging and draft arm designed for use with M. C. B. standard couplers.

Rubber Goods.—The Diamond Rubber Company of Akron, O., which has recently been reorganized, has just issued two new catalogues and price lists covering belting, hose, packing and mechanical rubber goods made by the company.

A Modern Coal Dock.

(Continued from page 293.)

dumping place. When in use, one man, stationed in the tower, can tend to all the hoisting, running and dumping of his tramway.

The unloading of the coal is carried on in the following manner: When the ship reaches such a position that the end of a tramway comes opposite the hatch two or more buckets are lowered into it. As soon as one is filled by the stevedores it is hoisted out and sent to the pile and dumped automatically. The arrangement for operating buckets consists of two drums which take their power from the shaft. One hoists the bucket out of the vessel and the other runs the car back and forth on the tramway. The speed of the bucket from the hold of the ship to top of tramway is 400 feet per minute, and along the tramway 1,600 feet per minute. From thirty to forty tons of coal can be unloaded in an hour by each hoist. The buckets hold one and one-and-a-half tons.

At both ends of the tramway is a chute so arranged that coal can be dumped directly into cars without extra handling except spreading it over the car floor. The same train is often loaded partly from the ship and partly from stock piles.

The newer portion of the dock is equipped with the most convenient and economical conveyors that have been constructed. They consist of four movable tramways, running on elevated ways, moved by means of a cable so as to come directly over the hatches of the boat to be unloaded. These four cover the space occupied by twenty stationary ones. The motive power is furnished by the long shaft as is also that used for hoisting and conveying. One man on each tramway is all that is necessary to move them and to run the hoisting and dumping machinery. He can stand in his shed on the tower and automatically load a train or dump on a stock pile. The speed of these is the same as that of the others. In every case one bucket is being filled while the other is being dumped.

The dock is supplied with four railroad tracks running its length, along the front and at the back end of the conveyors. The tracks are far enough below the dock level to bring the car sill even with the floor. In this way loading by hand is made easy. A man pushes his wheelbarrow into the car and dumps his coal without having any heavy inclines to go up.

On the shore end of the dock are the railroad yard, car scales and office. Here trains are made up and sent out over a belt line to the road they are billed for.

The belt line is thirteen miles long and crosses nearly all the roads centering at the head of the lakes. They are seven in number and reach every point in the West and Northwest. This is one of the particular advantages of the system and has proved a great success.

Of course it is never possible to operate the whole forty-four tramways at once, but the plant is capable of unloading the largest coal freighters in ten or twelve hours. As the dock is now equipped five of these ships can discharge at one time. Last fall, during the rush caused by the coal strike and nearing of close of navigation, five thousand tons were unloaded from one boat in ten hours.

Up to the present time this dock appears to be the best fitted out for rapid discharging of cargoes and distribution of any in the country. It has one advantage over others at the head of Lake Superior—direct communication with all railroads.

TECHNICAL.

Manufacturing and Business.

Mr. J. A. L. Waddell, Consulting Engineer, has opened an office in New York City with Mr. A. E. Foye, Assoc. M., Am. Soc. C. E., in charge. Mr. Waddell is prepared to act in all cases involving the engineering of bridges, elevated railroads, roofs and foundations; also in deep and difficult borings.

The Daimler Motoren Gesellschaft, Germany, has obtained a judgment against the Daimler Motor Co., of Long Island City, for $15,165, balance due for electrical machinery sold to them. The Daimler Motor Co. made an assignment July 30, 1897.

The Pennsylvania Car Wheel Co., Pittsburg, Pa., has started up. This company was organized, chartered and had its plant built in about 90 days.

The Weber Railway Joint Mfg Co., Cotton Exchange Bldg., New York City, has recently received contracts to furnish a large number of joints for the Atchison, Topeka & Santa Fe Railroad and the Brooklyn Heights Electric Railroad.

The Bushnell Mfg. Co. has removed its main office from Easton, Pa., to 43 Cedar street, New York City.

Fred S. Wonham, representing H. K. Porter & Co., Verona Tool Works and Billmeyer & Small, has removed his office from 122 Liberty street to 29 Broadway, New York City. Mr. Wonham gives special attention to export business, and is the export agent for the Verona Tool Works.

Charles Miller has been elected Second Vice-President of the Franklin Steel Casting Co., Franklin, Pa., to fill the vacancy caused by the death of W. J. Welsh.

F. M. Pease (Incorporated), Chicago, Ill., has sold one locomotive to the Standard Construction Company, Minneapolis, Minn.

The Bethlehem Iron Company has taken the contract for the shafts for the engines to be installed in the new power house of the Metropolitan Street Railway Company of New York City. These shafts are hollow, 37 in. outside diameter, with a 16-in. bore, and are 27 ft. 4 in. long. Of course, they are mandrel forged. They are made of open-hearth steel, fluid compressed and annealed. The cranks will also be made by the Bethlehem Company.

The company has large orders for finished guns of various calibres up to 12-in., also gun carriages and forgings for guns to be finished at the Government works. The company has been asked to quote a price on shafting for a Japanese torpedo boat now building in Japan. For this contract it must compete with Vickers Sons & Co., Schneider & Co., and Krupp.

The Star Brass Co.'s pop safety valves will be used on five engines recently ordered by the Ohio Central from the Brooks Locomotive Works. The same company's gages are used on 93 engines for the Great Northern; and gages, gage cocks and water gages on Southern Indiana engines recently built.

A mortgage for $1,250,000, given by the Illinois Car & Equipment Company, to the Illinois Trust and Savings Bank, dated April 14, 1898, was filed for record at Chicago April 15. The mortgage covers all the property formerly owned by the United States Car Co. in Alabama, Ohio and Cook County, Ill., and is given to secure an issue of bonds payable Jan. 1, 1948. These bonds bear interest at 4 per cent. to Jan. 1, 1901, and 5 per cent. for the balance of the life of the securities.

Commissioner McGann of Chicago advertised for bids April 15 for widening the Chicago River at Diversey Ave. This work has been desired by the Government engineers and city authorities for some years, and will cost about $25,000.

Nicholas S. Hill, Jr., formerly Engineer Secretary of the Sewerage Commission of Baltimore, Engineer to the Electrical Subway Commission of Baltimore, and Chief Engineer of the Water Department, announces his association with B. C. Howard, formerly Secretary and Treasurer of the McCay-Howard Engineering Co., general contractors for electrical work, under the firm name of Hill & Howard. The new firm has opened offices at 35 Manufacturers' Record Building, Baltimore, Md. They will do a general consulting engineering business, making a specialty of water works, electrical subways, electric light and power plant and transmission of power.

The Illinois Manufacturing Association will give its first dinner at the Grand Pacific Hotel, Chicago, on Friday evening, April 22. Mayor Harrison of Chicago, W. J. Calhoun, Interstate Commerce Commissioner, Nathaniel French of Moline, Levy Mayer, Col. John Lambert, L. W. Noyes and others will be among the speakers.

Iron and Steel.

John Hoge and 20 other stockholders, representing $100,000 of the $500,000 of the capital stock of the Ohio Iron Co., have petitioned the Court at Zanesville, O., for a receiver for the company.

Steam Heating Couplings in Germany.

The German Railroad Union is going to introduce hose couplings for steam heating on passenger trains and is seeking information. Makers of couplings that have been found by actual service to be useful and desirable are requested to send sample couplings and other information. These may be sent to Mr. A. von Borries, Royal Railroad Direction, Hanover, Germany. It is unnecessary for us to remind the readers of "The Railroad Gazette" that any investigation or experiment undertaken under the control of Mr. von Borries will be carried out in a serious and responsible way. They run no risk in communicating with him on this subject.

"Semi-Steel" Knuckles for Couplers.

The Committee of the Western Railway Club on the Revision of the M. C. B. Interchange Rules recommended that Section 29 of Rule 3 be changed so as to read "M. C. B. couplers not equipped with knuckles made of the same material as furnished by the coupler manufacturers, whether of steel, semi-steel or wrought iron, the delivering company is responsible. Such material to be subject to the approval of the M. C. B. Standing Committee on Couplers." While the recommendations of the committee were not adopted, it shows the tendency to recognize "semi-steel" on somewhat the same basis as cast steel and wrought iron, and for this reason attention is again called to the paper by Mr. Alex. E. Outerbridge, Jr., reprinted in our issue of April 8. As Mr. Outerbridge makes these positive assertions for the purpose of calling forth "prompt correction in case of error," it is reasonable to assume that he is well fortified to maintain the stand he has taken. The Committee of the Western Railway Club stated in support of their recognition of semi-steel that samples of this material were furnished to them which showed such toughness that it was thought semi-steel was better material than the steel used in many knuckles now in service. To the Committee a convincing argument was the fact that the Baltimore & Ohio has used for years large numbers of semi-steel knuckles, and that altogether there are between 225,000 and 250,000 of these knuckles in use which are reported to give good service.

The Melan Bridge at Topeka.

Topeka, Kan., has a bridge which is said to be "the largest Melan arch bridge in the world." It was completed Jan. 12, 1898, at a cost of $150,000. The bridge consists of five arches of Melan construction, the central one of 125 ft. span, those next adjoining each of 110 ft. span and each of the end arches of 97½ ft. span, the total length of the bridge being 540 ft. The net waterway is 520 ft. and the length out to out of foundations, 625 ft. The total length, including the embankment approaches, is 900 ft. The width of the roadway is 28 ft., and the sidewalks are each 6 ft., the total width between the hand rails being 40 ft., and from out to out of spandrels, 36 ft. The cement used amounted to 7,800 barrels, the broken stone, 8,278 cu. yds., the sand 5,000 cu. yds., and the steel 140 tons.

The bridge is over the Kansas River at Topeka. The first Topeka bridge company was chartered in 1857, and built a pile bridge at a cost of $10,000, which was completed in May, 1858, and carried away by flood in July of that same year. Ferries carried on the service for seven years, and then a pontoon bridge was built at a cost of $15,000, which was damaged by floods to the extent of $5,000 before it had been opened a year and a half. This was succeeded by a bowstring truss bridge of six spans, 152 ft. each, built by the King Wrought Iron Bridge Co., and in 1872 a wooden bridge was opened alongside to carry an electric railroad. When the building of the new Melan arch bridge was begun, the old bowstring bridge was moved to temporary piers and the new bridge was built on its site.

Pig Iron Production in March.

According to the Iron Age, there were in blast April 1, 194 furnaces, with a weekly capacity of 233,339 gross tons, against 193 furnaces in blast March 1, with a weekly capacity of 234,430 gross tons, and against 153 furnaces in blast April 1, 1897, with a weekly capacity of 173,279 gross tons. Stocks sold and unsold aggregated 809,008 tons on April 1, against 798,694 tons for the month previous.

The Block System in Austria.

The Austrian Railway Minister has ordered that, beginning with May 1, on all the State railroads, so far as possible, the system of running trains with a time interval be abandoned, and the system of a distance interval be substituted; and that no exceptions be permitted after April, 1899. The order is accompanied with a circular to the Austrian private railroads, strongly advising the same change on them.

The Lanius Sheet Iron Train Marker.

The sheet iron marker to take the place of a flag, made by John Lanius, of Galion, O., has been adopted as standard for use on the freight cabooses of the Cleveland, Cincinnati, Chicago & St. Louis. This marker has a flexible staff, and the sheet metal is perforated with numerous holes to lessen the resistance to wind pressure. The staff is fixed in the socket, so that the "flag" always stands at right angles to the side of the car. A short section of the staff between the socket and the lower side of the flag is made of a stout spiral spring, which gives the marker sufficient flexibility to prevent damage in case it should accidentally run against an obstruction.

The New Niagara Arch.

The new steel arch at Niagara Falls was closed Monday, April 18. This, it will be remembered, is the bridge building to take the place of the upper suspension bridge at Niagara Falls. It is a highway bridge, carrying trolley tracks and sidewalks. The new arch is 840 ft. long, being the longest arch in the world. It is built by the Pencoyd Iron Works, contractors, for the Niagara Falls & Clifton Suspension Bridge Company. Mr. L. L. Buck, M. Am. Soc. C. E., is Chief Engineer and Mr. R. S. Buck, M. Am. Soc. C. E., Resident Engineer. Other particulars of this bridge can be found in our issues of Feb. 28, '96, p. 141; March 6, '96, p. 167; Dec. 31, '97, p. 932.

The Chicago Sewer Work.

Mr. D. H. Louderback, President of the North Chicago Electric Railway, has written to Mr. L. E. McGann, Commissioner of Public Works, giving notice to the city that under the 20-year ordinance granted his road by the City Council, the road will hold the city responsible for damages resulting to it by the tearing up of its tracks in Lawrence Ave. from Evanston to Milwaukee Aves., in which the city proposes to lay one of the conduits of the new intercepting sewer system. (See this column for March 25). The course which the city will take in this matter has not been announced as we go to press, but bids for the Lawrence Ave. and Thirty-ninth St. conduits have been received and contracts will be awarded soon, as it is intended to have the work completed before winter.

Locomotive Staybolts.

In our issue of April 8, page 262, we referred to some recent methods for making the test holes in solid staybolt material, namely, that these holes in solid some shops punched or drilled before the bolts are placed in the firebox. A correspondent suggests that by the use of hollow staybolt material the shop work of forming these end holes is saved, and further, that the use of hollow bolts presents the best means for detecting broken stays. In our former note on this subject we had in mind only how solid staybolts may best be made; the hollow bolts are now so well known and so widely used that any argument as to their merits is unnecessary. An example of the strength of hollow staybolts was brought to our attention some time ago in examining the firebox sheets of a locomotive boiler which exploded because of broken staybolts; this firebox was mostly stayed with solid bolts, but had a few rows of hollow stays. While many of the solid bolts showed signs of old fractures and many others had failed at the time of the explosion, none of the hollow bolts were broken, but all had been pulled out of the sheets.

Electricity on the "Alley" Elevated.

The South Side Elevated R. R., Chicago, commenced running some of its trains by electricity April 20.

The Air Brakemen.

The sixth annual convention of the National Association of Railroad Air Brakemen opened in Baltimore April 12, Mr. E. E. McKee, the President, in the chair. The attendance was about 135. Committee reports were presented at the first session on Brakes on Engine Truck Wheels and on Piston Travel; Its Adjustment and Effect. In the first report the committee pointed out the fact that with the high speeds now attained it is essential to have every possible ounce of braking power, inasmuch as we have over and over again had the lesson that it is the last 25 or 30 ft. that kills. In the afternoon the delegates visited various points of interest in the city. Officers were elected as follows: President, C. P. Cass, Monett, Mo.; Secretary, P. M. Kilroy, Pine Bluff, Ark.; Treasurer, Otto Best, Nashville, Tenn. The next convention will be held at Detroit.

THE SCRAP HEAP.

Notes.

The St. Louis Southwestern is trying an oil-burning locomotive.

The Massachusetts Legislature has rejected a bill requiring railroads to carry bicycles free in baggage cars.

The Missouri, Kansas & Texas is making a large addition to its hospital at Sedalia. The company will fit up a hospital car.

The Directors of the Boston Merchants' Association have adopted resolutions opposing the passage of the Cullom bill now before Congress.

Mr. W. A. Thrall has won his suit in the United States Circuit Court at Chicago against Poole Brothers for infringement of his patent on the continuous-strip mileage ticket.

The Railroad Young Men's Christian Association has just opened a large building in Portland, Me. The house is one formerly used as a hotel, and is situated on West Commercial street.

The Omaha City Council has passed an ordinance which is expected to discourage the manipulation of railroad tickets during the fair. A license of $75 will be imposed upon all doing a brokerage business, and the scalper found guilty of dealing in individual tickets may be fined $50 for each offense.

Rev. Bohler Walker, of Joliet, Ill., has made complaint to the Interstate Commerce Commission against the Chicago & Alton and other roads for alleged refusal to grant half fare permits while they give them to other clergymen. He had criticised the roads for giving passes too freely to city officers and says that the Pass Bureau of the railroads thereupon denied his application.

The grain elevator on the Hoosac Tunnel dock at Boston was destroyed by an explosion and fire on the morning of April 16. There was in the building about 400,000 bushels of grain, mostly wheat, all of which was destroyed either by fire or water, and the total loss is estimated at $600,000. The disaster originated in an explosion of dust, which blew off the roof, and the falling timbers did several thousand dollars' damage to adjoining buildings.

The Illinois Central has issued a circular giving notice that hereafter all applicants for positions as station agents, telegraph operators, train and station baggagemen, hostlers, conductors, collectors, switchmen, brakemen, train porters, engineers, firemen, tower and signal men must submit to a physical examination. The examination will be conducted by the chief surgeon, and if he approves the application the employe must pay a fee of $1 out of his first month's salary.

The Supreme Court of Minnesota has handed down an opinion in the Hanley Falls "Y" case affirming the judgement of the lower court against the railroad company. This controversy was begun about 10 years ago, and the present decision sustains the law of 1895 requiring railroad companies to lay connecting tracks where their lines cross or adjoin one another. The aim is to give a shipper the choice of two or more lines in sending freight, though his factory or warehouse may be located on only one of them.

On the Indianapolis Division of the Pittsburg, Cincinnati, Chicago & St. Louis the following order has been issued: "In all cases where emergency arises passenger trainmen must stop their train by the use of conductor's brake valve, instead of depending on the air signal. Conductors and enginemen must strictly comply with that part of rule 500 which requires orders to be shown to fireman, front brakeman and the flagmen, and passenger conductors must in addition show their orders to baggage masters."

The damage to the Wheeling & Lake Erie by the flood of March 23 was about $25,000. Passenger traffic was suspended for seven days. No metal or truss bridges were damaged. The damage to the lines of the Baltimore & Ohio west of the Ohio River was about $45,000. In one or two places the line was blocked for six days, but trains were detoured over other lines. No bridges were damaged in their superstructures, but four important structures were temporarily impassable on account of damage to the masonry.

President T. G. Bush, of the Mobile & Birmingham, has published a report on the contest of farmers in raising cotton, corn and hay in the competition for prizes offered by the railroad company last year. In each case the amount received for the crop, the cost of the same, in detail, and particulars as to weather and management are given. The first prize for cotton, an annual pass, was given to R. W. Atkieson. The second prize was a two-horse thimble skein wagon, and the third a sub-soil plow. The first prize for corn was taken by C. E. Fort, and that for hay went to the same man. Mr. Bush thinks that none of the contestants did as well as he might have done. Two other prizes were offered by merchants in connection with the offer of the railroad company.

The Trans-Mississippi Exhibition.

The managers of the Trans-Missisippi and International Exposition, to be held at Omaha from June 1 to Nov. 1, have issued a revised edition of the pamphlet describing the principal features of the fair. Descriptions of the buildings erected by the different States and of the action taken by 35 different States, are briefly set forth. Full page illustrations are given of the principal buildings. A list is given of nearly 100 conventions of various national associations which will hold annual meetings at Omaha this year. The President of the corporation is G. W. Wattles and the Secretary John A. Wakefield. The Executive Committee consists of the managers of the different departments as follows: Zachary T. Lindsey, ways and means; Edward Rosewater, publicity and promotion; Freeman P. Kirkendall, buildings and grounds; Edward E. Bruce, exhibits; Abram L. Reed, concessions and privileges; William N. Babcock, transportation. The pamphlet contains the names of the commissioners appointed by those states which have taken official action looking to participation in the exposition.

Saratoga Conventions.

The United States Hotel, Messrs. Gage & Perry, proprietors, Saratoga Springs, N. Y., will open for the season Tuesday, June 14. A special price of $4 a day for a single room or $5 a day for room with bath has been made for persons who will attend the Master Car Builders' and Master Mechanics' conventions. Full particulars will be supplied on application to Dr. John L. Perry, Murray Hill Hotel, New York City.

Public Works in Chicago.

At the last meeting of the old City Council of Chicago, held April 11, Mayor Harrison presented his first message, in which the maintenance of the credit

of the city, the progress of track elevation, the intercepting sewer plans and the five-year garbage contracts are treated in detail. Within sixty days at least 40 per cent. of the sewage now polluting the lake will have been diverted by the intercepting sewers which were agreed upon by the city officials and the Engineering Committee of the Sanitary District, and the conduits for which are now being built. Through the work now under way and the further plans being prepared it is expected that the Chicago River will be improved by dilution; the waters of Lake Michigan, from which the city's water supply is drawn, will no longer be polluted, and about 25 per cent. of the necessary dilution of the drainage canal will be supplied.

The message shows that more track elevation has been done in the last year than in any previous year. The raising of the St. Charles Air Line tracks at Sixteenth and Clark streets, and the abolishment of the Sixty-first street viaduct are particularly mentioned. The cost of track elevation this year will be about $8,000,000.

During 1897, 183 arc lamps have been added under the new Department of Electricity, which is a greater increase than in any year since 1890. The average cost per light will not exceed $200 per year. The new lights will be distributed on the north, west and south sides of the city where most needed. The increase in the lighting system will necessitate one new station on the south side, an increase in the capacity of the three stations now in use and the equipment of one station which has not been in use for three years. On the south side the cost of new lights will be much reduced by the offer of the Chicago City Railway of the use of such poles as the city may desire to utilize. If Mr. Yerkes had not refused to make a similar arrangement for the north and west side street railways, the message says that 2,600 are lights could have been added to the present system. Owing to the system of electric inspection the total loss from fires caused by electricity is put at $9,515.

The defeat of the city in the effort to make five-year contracts for the disposal of garbage is mentioned. The litigation with the Illinois Central Railroad regarding the jurisdiction of the city over the lake front, and with parties opposed to the intercepting sewer plans, in both of which contests the city was successful, are also touched upon in the message.

Locomotives for Russia.

In reference to the 20 freight locomotives recently ordered from the Baldwin Locomotive Works by a Russian railroad, the St. Petersburg correspondent of the Berlin "Boersen-Zeitung" informs that paper that the price agreed upon was $13,000 for each machine, delivery to be made in six months. At the same time this road placed an order for 25 locomotives of the Mallet compound system with a French company at Belfort, the price being $16,200, with delivery in 1899. The prices in both instances include delivery in Riga, as well as mounting the machines. It is understood that half of the locomotives were ordered in France in compliance with the "wish" of the Russian Government that French manufacturers should be especially favored by Russian companies when ordering goods abroad. The correspondent concludes: "Since all the Russian locomotive works are filled up with orders for long periods to come, private railroads will have to supply themselves from foreign countries; and in such cases the Americans, with their low prices and extremely short periods for delivery, are, of course, the first to be considered." —Journal of Commerce (New York).

Railroad Strike in Japan.

The Western plan of crippling a railroad by a strike of employees has recently been tried on the Nippon Railroad, the largest private railroad in Japan. The engine drivers demanded higher wages and certain modifications in the schedule of working hours, which were refused, causing a strike of those employees. This eventually extended to the firemen, trainmen and employees in other departments, necessitating a suspension of traffic on the entire system of about 1,000 miles. A disagreement on the part of the officers and directors of the road followed, resulting in the resignations of the President, Vice-President and Board of Directors, which will be acted on at a meeting of the stockholders to be held next month. Concessions have been made to the striking employees and traffic has been resumed. The strike extended over a period of about two weeks.

LOCOMOTIVE BUILDING.

It is again reported that the Chicago, Bluffton & Cincinnati will soon order locomotives.

The Schenectady Locomotive Works are building one engine for the St. Joseph Stock Yards.

The Louisiana & Northwest has ordrered two mogul locomotives from the Baldwin Locomotive Works.

The Elgin, Joliet & Eastern is considering ordering one shifting engine and some heavy freight engines.

The Detroit & Mackinac Railroad will buy some new locomotives, but no orders will be placed at present.

The Surry, Sussex & Southampton Railroad has placed an order with the Baldwin Locomotive Works for one consolidation engine.

The Norfolk & Western has placed an order for six more two cylinder compound freight engines with the Baldwin Locomotive Works.

The Pecos Valley & Northern (see Railroad Construction Column April 8.) will, it is reported, soon be in the market for locomotives.

The Western Maryland Railroad has awarded a contract to the Baldwin Locomotive Works for building four consolidation engines.

The Baldwin Locomotive Works have received an order to build nine more 10-wheel compound engines for the Philadelphia & Reading.

The Choctaw, Oklahoma & Gulf Railroad will require some new locomotives in the near future. No specifications have yet been prepared.

The Baldwin Locomotive Works have received an order to build one narrow gage six-wheel mining locomotive for the Southwest Virginia Improvement Co.

The Baldwin Locomotive Works have received an order to build one shifting engine for the Standard Steel Works and one small four-wheel complex engine for the Ashland Coal & Coke Co.

The Interoceanic railroad, of Mexico, has increased the order for locomotives placed with the Schenectady Locomotive Works, and referred to in our issue of April 15, from four to eight engines.

The Southern railroad has placed orders with the Richmond Locomotive Works for eight, and with the Baldwin Locomotive Works for four consolidation engines, to have 21 x 28 in. cylinders, 58-in. driving wheels, and to weigh 158,000 lbs., with 139,000 lbs. on the drivers.

The four simple consolidation locomotives ordered by the Chicago, Burlington & Quincy from the Pittsburg Locomotive & Car Works, and noted in our issue of last week, will have cylinders 22 by 28 in., drivers 52 in. in diameter; weight on drivers of 160,000 lbs. and total weight of 175,000 lbs.; Belpaire boilers; working steam pressure, 180 lbs.; tank capacity for water 5,000 gals., and coal capacity 17,500 lbs. These engines will be equipped with Westinghouse air brakes, West bell ringers, Kewanee brake beams, Ross-Mehan brake shoes, Richardson safety valves, Latrobe tires, Jerome piston and valve rod packing, No. 10 lifting injectors on right side and No. 10 non-lifting injectors on left side, cast iron wheel centers and steel axles.

CAR BUILDING.

It is reported that the Central of Georgia will build 200 new box cars at its own shops.

The Lake Superior & Ishpeming Railroad is having two passenger cars built by Pullman's Palace Car Co.

The St. Charles Car Co. is building two passenger and 10 freight cars for the Louisiana & Northwest Railroad.

The Kings County Elevated Railroad (Brooklyn, N. Y.) will shortly place an order for from 30 to 50 new passenger cars.

The Pecos Valley & Northeastern (see Locomotive Building column) will probably buy some new cars in the near future.

The Choctaw, Oklahoma & Gulf Railroad contemplates buying some new freight equipment, but we are advised that nothing definite has been decided.

The order for cars placed by the Chesapeake & Ohio with Pullman's Palace Car Co., and noted in our recent issues, has been reduced from 1,000 to 900.

The Detroit & Mackinac Railroad will buy 100 flat and 50 box cars. Some passenger cars will also be bought, but no orders for these will be placed at present.

The Chicago, Rock Island & Pacific will build 200 palace stock cars at its Chicago and Horton shops, instead of 85, as noted in our issue of April 1. These cars will be the standard of the road, with Schoen pressed steel truck bolsters and Bettendorf brake beams.

The Lehigh Valley Railroad has increased its order for 60,000 lb. capacity box cars, recently placed with the Union Car Co., and noted in our issue of March 25, from 1,000 to 1,250, the additional 250 cars to be similar in all respects to the specifications as published. The road does not contemplate placing further orders for new equipment at present.

The Toledo & Ohio Central has ordered 200 coal cars from the Michigan-Peninsular Car Co. and 200 from the Ensign Manufacturing Co., making 400 new coal cars in addition to the 400 recently ordered from the Wells & French Co., or 800 in all. The cars just ordered will be similar to the first 400 ordered, and will be equipped with Westinghouse air brakes, Congdon brake shoes, Monarch solid brake beams, Fulton Iron and Engine Works brasses, Tower couplers, McCord journal boxes and journal box lids and Simplex body and truck bolsters.

The Nassau Electric Railroad, of Brooklyn, N. Y., will buy a number of new closed cars.

The Hamilton & Lindenwald Electric Transit Co., of Hamilton, O., will probably order three new cars in the near future, but nothing definite has been decided.

The Milwaukee Electric Railway & Light Co. of Milwaukee, Wis., has placed an order with the Barney & Smith Car Co. of Dayton, O., for 36 closed cars. They will be 29 ft. long over body, 41 ft. long over bumpers, vestibuled, and mounted on Barney & Smith Class H double-motor trucks. The windows will be supplied with double-thick glass, curtains of Pantasote on Burrowes fixtures.

BRIDGE BUILDING.

ANNAPOLIS, MD.—It is stated that the commissioners of Anne Arundel county ask for bids for building a bridge across Long Cove. A. K. Starlings, Clerk, Annapolis.

BOSTON, MASS.—The committee of the Legislature on metropolitan affairs and roads and bridges, sitting jointly, reported a bill for the construction of a new bridge across the Charles river, between Boston and Cambridge. (Feb. 18, p. 128.)

CENTREVILLE, TENN.—A new county bridge will be built across Duck river, Hickman county, at a cost of about $5,000.

CINCINNATI, O.—The Commissioners of Hamilton county will build a new bridge in Colerain township to cost about $1,860; one across Taylor's creek, between Greene and Miami townships, to cost about $2,200. Frank S. Krug, County Engineer.

COLUMBUS, GA.—The Columbus Railroad Co. will build a bridge across the Chattahoochee River.

FORT SMITH, ARK.—The Campbell-Lynch Bridge Company of Fort Smith was incorporated to build a toll bridge across the Arkansas River at Webster's Falls, I. T. Among the incorporators are: William W. Campbell, Ben T. Duval and F. M. Davis. The capital stock is $100,000, of which $1,000 has been paid in.

LOUISVILLE, KY.—A new county bridge will be built across the river near Fisherville, Jefferson county, at a cost of about $3,000.

NEW HAVEN, CONN.—A bridge is just finished at Grand avenue. It is of steel, 427 ft. long, 52 ft. wide, with one roadway and two sidewalks. The approaches are two deck plate girders. The draw-span is 200 ft. long, and is worked by electricity. The roadway is paved with vitrified brick. The bridge was built by the Berlin Iron Bridge Company.

PHILADELPHIA, PA.—Councilmen Hawkes and Smith each introduced bills at a recent meeting of the Council to authorize a loan of $3,000,000 for the abolition of all grade crossings on the line of the Philadelphia & Reading on Ninth street, from Fairmount avenue to Huntingdon street. Mr. Smith's bill looks toward co-operation with the railroad company, which is expected to contribute to the cost of the proposed work.

SALMONS CITY, KY.—It is stated that the commissioners of Simpson county will build a new bridge over Drakes creek.

WAPAKONETA, O.—G. A. Orphal, auditor, Auglaize county, asks for bids until May 3 for building two abutments for a bridge across the St. Mary's river; also for a steel deck bridge of one span 89 ft. long and 66 ft. wide.

ZANESVILLE, O.—A new county bridge of steel will be built over the Licking River at Dillon's Falls.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Choctaw, Oklahoma & Gulf.—Preferred, semi-annual 2½ per cent., payable April 30.

Cincinnati, Sandusky & Cleveland.—Preferred semi-annual, 3 per cent., payable May 2.

Nashville, Chattanooga & St. Louis.—Quarterly, 1 per cent., payable May 2.

Northern Pacific.—Preferred, quarterly, 1 per cent., payable June 3.

Consolidated Traction (Pittsburgh).—3 per cent. payable May 5.

New Orleans & Carrollton.—Quarterly, 1½ per cent., payable April 20.

St. Charles St. (New Orleans).—Quarterly, 1½ per cent., payable April 19.

Society of Railway Club Secretaries.

The next meeting of the society will be held at Congress Hall, Saratoga, N. Y., Wednesday, June 8, at 11 o'clock a. m. H. H. Roberts (Secretary of the St. Louis Railway Club), Secretary-Treasurer.

New York Railroad Club.

At the meeting of the club held March 17, President Mitchell in the chair, Mr. George Gibbs read a paper on "Electrical Distribution of Shop Power," which was reproduced at some length in the Railroad Gazette March 18, p. 197.

At the regular meeting held April 21 a topical discussion was had on the subject "Motive Powers—Past, Present and Future."

Northwest Railway Club.

At the February meeting of the Northwest Railway Club held at the Ryan Hotel, St. Paul, President Lyon in the chair, papers were presented on the "Automatic Adjustment of Air Brake Slack," by Mr. J. K. Lencke; "Application and Handling of Locomotive Sight Feed Lubricators," by Mr. Bischoff, of the Nathan Manufacturing Co. Discussion was had on "Re-roofing of Old Cars" and "Lubrication of Locomotive Valves and Cylinders."

Engineers' Club of St. Louis.

The 470th meeting was held at 1600 Lucas Place, April 6, at 8 p. m., with President Bryan in the chair. Thirty-six members and five visitors were present.

Mr. Robert Moore gave an informal talk on "Concrete Masonry." He stated that during the past twenty years concrete had to a large extent taken the place of stone work in engineering construction. The reasons were that concrete construction was the cheaper, that small pieces of stone could be used for concrete which would not be suitable for masonry, that high priced labor was dispensed with, and that the resulting structure is a monolith. He exhibited drawings and photographs of concrete piers, bridges and culverts, and gave data concerning the conditions under which they were built. Messrs. Hermann, Colby, Connor, Flad, Chittenden, Gayler, Holman and Laird took part in a general discussion concerning the properties and uses of concrete.

Engineers' Club of Cincinnati.

At the March meeting of the club, 15 members present, two new members were elected and one application for membership was presented. The Secretary announced the death of Mr. Oswald Dietz.

The question of joining the Association of Engineering Societies was discussed at some length, resulting in the appointment of a committee to bring the matter before the entire membership for letter ballot.

Mr. W. H. D. Totten read a paper on "Testing and Inspection of Steel Materials." He contrasted the present methods with those of former years in this respect, and outlined the practice at the works of the Carnegie Steel Co., Ltd., and the workings of its bureau of inspection, together with the operations of inspecting and testing as carried out at those works. The advantages of such a bureau to the maker and the customer were pointed out. Various specifications for inspection and testing were quoted from.

The Civil Engineers' Club, of Cleveland.

A regular meeting was held April 12 in the Assembly Room of the Electricity Building, Case School of Applied Science. Prior to the meeting the members visited the Mechanical and Electrical Laboratories. At 8 o'clock the meeting was called to order by President Osborn. Present, 41 members and 16 visitors. The report of the Executive Board was read; also a letter from the Engineers' Society of Western New York inquiring as to the legal status of the profession in the state of Ohio. The letter had already been officially answered by the Secretary. Another letter was read from H. M. Wilson, Washington, D. C., suggesting that a memorial be sent to the Ohio Legislature in favor of the proposed topographical survey of the state, to be in connection with the U. S. Geological Survey. An informal discussion followed.

Professor C. H. Benjamin then gave a lecture upon the "Evolution of Machine Designing," which was

illustrated throughout by lantern slides. These views included some very ancient and curious machines; others more modern, but out of date, and some of the latest and most approved designs. He called attention to faulty designing in the earlier machines from an aesthetic, as well as structural, point of view, such as the use of carved cast-iron legs of Louis XIV. style under heavy planers, the imitation of wood framing and paneling in cast-iron work and the introduction of other architectural features, all of which were entirely unnecessary to the machine. At the close of the lecture a discussion followed.

The club adjourned at 10 p. m. to the Mechanical Building, where Professor Benjamin called attention to various matters of interest, after which luncheon was served.

Central Railway Club.

The Central Railway Club held a regular meeting March 11 at the Hotel Iroquois, Buffalo. The programme for the day, which included a visit to the various plants at Depew, was given in "The Railroad Gazette" March 4, page 168.

The report of the proceedings of the Society of Railway Club Secretaries, meeting of Friday, Feb. 18, was read, and the central club voted to indorse the plans of the secretaries to issue club Proceedings as second-class mail matter, and to this end an amendment of the by-laws was introduced to increase the annual dues $1, the same to cover the subscription to the Proceedings. Under the rules the amendment was held over until the next regular meeting. An amendment to the Constitution was adopted:

Providing for a Nominating Committee of five to be appointed by the President to present at the annual meeting nominnees for each office to be filled.

An amendment offered to make the office of Secretary elective was defeated.

The Committee on Revision of the Rules of Interchange, consisting of Messrs. H. C. McCarty, Chairman; H. F. Ball and E. G. Rouse, submitted its report. A report was read on "The Best Method for Keeping a Boiler Clean, Including the Value of Blow-Off Cocks;" Committee, Messrs. John Magarvey, E. P. Mooney and M. L. Flynn. This report will be discussed at the next meeting. A report was also read on "Specifications for Air Brake Hose"; committee, Messrs. E. D. Bonner, J. A. Bradley and Robert Gunn.

Discussion followed on the subjects "Springs for Freight Car Trucks" ("Railroad Gazette," Feb. 18, p. 119) and "Relative Height of Draw Bars."

The next regular meeting will be held at the Hotel Iroquois, Buffalo, May 13, at 2 p. m. The programme for the morning was not decided upon by the Entertainment Committee, but will probably be a visit to Fort Porter or to the Wagner car shops at East Buffalo. In the event of neither of these plans proving practicable, arrangements will be made for a carriage ride about the city and through the park. The Entertainment Committee consists of Messrs. E. Chamberlin, Chairman; O. P. Letchworth and F. B. Griffith.

The programme for the business meeting is as follows: Reports. "Is Any Benefit Derived from the Swedging of Tubes in the Fire Box End of Locomotives? Is It Advantageous to Anneal the Copper Ferrule Thoroughly Before Applying in Either Case?" Committee: Messrs. E. A. Miller, Chairman; F. B. Griffith and Allen Vail. The committee on "Revision of Rules of Interchange" is continued, with Mr. H. F. Ball as chairman, to report at the September meeting their interpretation of the Rules as they shall have been adopted at the M. C. B. convention. Discussion will take place at this May meeting on the reports read at the March meeting and mentioned above.

PERSONAL.

—Chevalier C. Barratoni, American Agent for the London & North Western Railroad, died at his home in Yonkers, N. Y., April 16, at the age of 47.

—Mr. James P. Lee, Supervisor of Bridges and Buildings of the Knoxville Division of the Louisville & Nashville, died at his residence in Stanford, Ky., April 8, at the age of 47.

—The German Society of Locomotive Engineers, which has about 14,000 members, has elected George Westinghouse as an honorary member "as a recognition of his services to transportation by the invention of his railroad brake."

—Mr. A. E. Schrader, at one time Traffic Manager of the Illinois Midland, now a part of the Terre Haute & Indianapolis, died at Evansville, Ind., April 8, at the age of 65. Mr. Schrader was also a Director of the Illinois Midland in 1885.

—Mr. Henry W. Hickman, until recently of the Railroad and Warehouse Commission of Missouri, was killed near Puxico, Stoddard Co., Mo., on the afternoon of April 14. He was on his way home to Puxico, when a tree fell upon him, killing him instantly.

—Mr. Henry I. Miller, Superintendent of the Main Line Division of the Terre Haute & Indianapolis, has been elected to the Board of Managers of the Rose Polytechnic Institute at Terre Haute, Ind., the town of his residence. Mr. Miller has been Superintendent of the Main Line Division since 1894.

—An engineer in the office of the Prussian Ministry of Public Works, Franz Balzer, has been granted several years' leave of absence in order to accept an appointment as technical adviser in the Japan Ministry of Public Works at Tokio, where heretofore all the foreign technical advisers have been Englishmen or Americans.

—Mr. Frederick Bomches, who built the great pier and other harbor works at the Austrian port of Trieste, on the Adriatic, between 1868 and 1883, and was later Chief Inspector of the Austrian Southern Railroad, is dead. His harbor work was of especial difficulty, being built where the mud on the bottom was 65 feet deep.

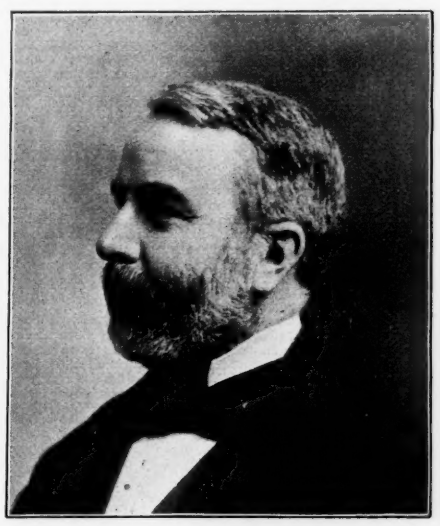
—Mr. Charles Philip Coleman, General Storekeeper of the Lehigh Valley, with office at Packertown, Pa., has resigned to accept the position of Purchasing Agent of the Bethlehem Iron Co., South Bethlehem, Pa. Mr. Coleman entered railroad service in the Passenger Department of the Lehigh Valley in 1881. From March, 1888, to February, 1891, he was Chemist and Engineer of Tests. From February, 1891, until April, 1892, he was Assistant General Superintendent of the Eastern Division, and then became General Storekeeper.

—Mr. Montgomery A. Kellogg, Chief Engineer of Construction of the Park Department, New York, died April 19 of Bright's disease and other maladies. Mr. Kellogg had been identified with the Park Department since 1858, and had been Chief Engineer since 1871. He was born in Galway, N. Y., in 1830, and was educated at the Rensselaer Polytechnic Institute, Troy. He did some railroad and waterworks engineering, and forty years ago he moved to New York and accepted a place in the Park Department, and had been identified with the department ever since.

—The statement that Mr. Arthur Mills, General Traffic Manager of the Boston & Albany, with office at Boston, has resigned his position to accept the office of Vice-President and General Manager of the Merchants' Dispatch Transportation Company, with office in New York City, was somewhat premature. His resignation is not effective until April 26. He accepts the new office May 1. Mr. Mills entered railroad service in 1872 with the Burlington & Missouri River at Plattsburgh, Neb. In September, 1874, he was appointed Agent of the International Fast Freight Line at Boston, and held that office until February, 1877, when he became General Freight Agent of the Boston, Clinton, Fitchburg & New Bedford, now a part of the Old Colony line of the N. Y., N. H. & H. In November, 1878, he took service with the Boston & Albany as Assistant General Freight Agent. Nov. 20, 1884, he was appointed General Traffic Manager of the Boston & Albany.

—Mr. Chauncey Mitchell Depew, LL. D., who retires as President of the New York Central & Hudson River to become Chairman of the Boards of Directors of the four Vanderbilt lines, comprising the New York Central & Hudson River, the Lake Shore & Michigan Southern, the New York, Chicago & St. Louis and the Michigan Central, was born in Peekskill, N. Y., April 23, 1834. He was graduated from Yale College, and in 1866 entered railroad service as attorney for the New York & Harlem, now leased to the New York Central & Hudson River, which position he occupied for three years, then becoming Attorney for the New York Central & Hudson River. He was General Attorney for the New York Central & Hudson River in 1875. Mr. Depew became Second Vice-President, in addition to his duties as General Counsel of the New York Central, in 1882, and was elected President in 1885, succeeding Mr. James H. Rutter. He is President of the Honduras Railroad Syndicate, and a Director of the Wagner Palace Car Company. He is also President of 16 railroads in the United States, Vice-President of one and a member of the Board of Directors of 41 railroads. In all, Mr. Depew is a Director in 58 miscellaneous corporations, including railroad companies. Mr. Depew was Secretary of the State of New York in 1864. (April 1, p. 237.)

—Mr. Samuel Rogers Callaway, President of the Lake Shore & Michigan Southern, was elected President of the New York Central & Hudson River at the annual meeting held in Albany, N. Y., April 20 succeeding Chauncey Mitchell Depew, who has been made Chairman of the Boards of Directors of the Vanderbilt lines. (April 1, p. 237.) Mr. Callaway began railroad service in 1863 as clerk in the Auditor's office of the Grand Trunk. From 1869 to 1871 he was chief clerk to the Superintendent of the Great Western, which is now a part of the Grand Trunk, and



Mr. Samuel Rogers Callaway.

from that date to 1874 he was private secretary to the General Manager of the Great Western. Mr. Callaway was Superintendent of the Detroit & Milwaukee, now the Detroit, Grand Haven & Milwaukee, owned by the Grand Trunk, from 1874 to 1878, when he became Superintendent of the Detroit, Saginaw & Bay City, now a part of the Michigan Central, which position he occupied until 1881. He was General Manager of the Chicago & Grand Trunk from 1881 to 1884, and was President of the Chicago & Western Indiana in 1883 and elected President of the Belt Railway of Chicago June 6, 1883. Mr. Callaway was Second Vice-President and General Manager of the Union Pacific System from September 1, 1884, to June 30, 1887. He remained with the Union Pacific as a Director for about a year. He was elected President and General Manager of the Toledo, St. Louis & Kansas City in September, 1887, and remained as such until January, 1895, when he became President of the New York, Chicago & St. Louis. He was also receiver of the Toledo, St. Louis & Kansas City from May, 1893, to September, 1894. He was elected President of the Lake Shore & Michigan Southern, August 8, 1897, succeeding the late Mr. D. W. Caldwell, who succeeded Mr. John Newell, and died July 21, 1897.

Mr. Callaway was also elected at the annual meeting of the N. Y. C. & H. R., at Albany, a Director of the N. Y. C. & H. R., the West Shore and the Mohawk & Malone.

ELECTIONS AND APPOINTMENTS.

American Express Company.—F. C. Fargo, heretofore Superintendent of the Indiana Division, has been appointed General Superintendent, with headquarters at Chicago, Ill., succeeding the late James Tumbull.

Baltimore & Ohio Southwestern.—Frank E. Tracy, Assistant Secretary, with office at Cincinnati, has resigned. Mr. Tracy was Assistant Purchasing Agent of the Ohio & Mississippi in 1893 before its absorption by the B. & O. SW.

Bristol, Elizabethton & North Carolina.—W. R. King has been appointed Assistant Superintendent, with office at Bristol, Tenn.

Central of New Jersey.—F. E. Higbie, heretofore General Car Agent, has been appointed Superintendent of Car Service. The office of General Car Agent has been abolished. W. L. Hoffecker has been appointed Division Master Mechanic of the New Jersey Central Division, with office in Jersey City. J. G. Thomas has been appointed Division Master Mechanic in charge of the Lehigh & Susquehanna Division. The offices of Assistant Superintendents of Motive Power and Equipment have been abolished.

Michael Griffin, Supervisor of the Lehigh & Susquehanna Division, with office at White Haven, Pa., has had his jurisdiction extended, taking effect April 1 over the tracks between Phillipsburg and Penobscot, including the Lehigh & Susquehanna, Nesquehoning Valley, Treschow, Drifton and Upper Lehigh branches, succeeding G. W. Twining, promoted. (March 25, p. 224.)

Central Pacific (S. P.).—At a meeting held in San Francisco April 13 William Thompson, of San Francisco, Cal., was elected a Director, succeeding I. E Gates, of New York. At a meeting of the Board of Directors held at the same place April 14 William H. Mills, heretofore Second Vice-President and Treasurer, was elected Vice-President and Treasurer. J. C. Kirkpatrick was elected Second Vice-President and Charles P. Eels was elected Third Vice-President.

Chicago, Milwaukee & St. Paul.—E. X. Hastings, Superintendent of the Prairie du Chien and Mineral Point Divisions, with headquarters at Milwaukee, has been transferred to the Superior Division as Superintendent, succeeding the late R. R. Minturn. H. B. Earling, son of President A. J. Earling, now Superintendent of the Terminals in Milwaukee, has been appointed Superintendent of the P. du C. and the M. P. Divisions, succeeding Mr. Hastings. B. H. McNaney, heretofore Station Master in Milwaukee, has been promoted to the Superintendency of Terminals in that city, succeeding Mr. Earling. (April 1, p. 245; April 8, p. 264.)

Chicago, St. Paul, Minneapolis & Omaha.—James McCabe, formerly Superintendent of the Eastern Division, with office at St. Paul, has been appointed to the newly created position of Fire Warden. This service has to do with insurance and fire protection.

Cleveland, Cincinnati, Chicago & St. Louis.—George Tozzer, heretofore Assistant Purchasing Agent, with office at Cincinnati, has been appointed Purchasing Agent, succeeding the late A. M. Stimson. (March 11, p. 186.)

Detroit & Lima Northern.—W. H. Yeazell has resigned his position as Car Accountant with the Detroit, Toledo & Milwaukee, and hereafter will have jurisdiction over the D. & L. N. only. His headquarters remain at Tecumseh, Mich. (April 15, p. 286.)

Detroit, Toledo & Milwaukee.—F. M. Bauer has been appointed Car Accountant, with headquarters at Toledo, O., succeeding W. H. Yeazell, resigned.

Goodrich Transportation Co.—R. C. Davis, of Chicago, Ill., has been appointed General Passenger Agent of the Goodrich Line, operating passenger steamships on the Great Lakes, succeeding W. A. Bonn, resigned. W. H. Cochrane has been appointed Assistant General Passenger Agent.

Grand Trunk.—J. H. Harkom has resigned as Master Mechanic of the Eastern Division, with office at Montreal, and has been succeeded by Thomas McHattie as Acting Master Mechanic of the Eastern Division, with headquarters at the same place. A. A. Maver has been appointed Locomotive Foreman at London, Ont., succeeding Mr. McHattie, promoted. J. McGrath has been appointed Directing Shop Foreman, succeeding Mr. Maver, transferred. W. Turnbull succeeds Mr. McGrath as Repair Shop Foreman at Toronto, Ont. Appointments effective April 16.

Hagerstown & State Line.—At a meeting of the stockholders of this new company, held at Hagerstown, Md., April 14 (March 25, p. 224) the following Directors were elected: John M. Hood, Henry Kyd Douglas, William Updegraff, John W. Cable, William H. McCardwell, H. C. Koehler and William Koalhofer. John M. Hood, President of the West Maryland, was elected President, and J. T. M. Barnes, of Baltimore, was elected Secretary and Treasurer.

Kansas City, Excelsior Springs & Northern.—Henry N. Garland, of Kansas City, Mo., heretofore a Receiver of the Excelsior Springs with A. C. Braley, has been elected President of the reorganized company, now the Kansas City, Excelsior & Northern. (Dec. 3, 1897, p. 860.)

Kinderhook & Hudson.—At a meeting of the Directors, held in New York City April 15, the following new officers were elected: President, Charles B. Haines; Vice-President, John Delahunty; Secretary, H. McGonegal, and Treasurer, William C. Roberts.

Knoxville & Bristol.—J. V. Woodward, of 119 South Fourth street, Philadelphia, Pa., has been elected President, succeeding Adolph Segal. (April 8, p. 265.) Mr. Segal was President from March 3 to March 22, when permanent organization was effected.

Mobile & Birmingham.—J. J. Thomas, heretofore Master Mechanic, with office at Mobile, Ala., has resigned to take service with the Mobile & Ohio.

Nevada County Narrow Gage.—At a meeting held recently at Grass Valley, Cal., Charles P. Loughridge was elected a Director, succeeding the late George D. McLean. J. F. Kidder was elected President and General Manager; Peter Johnson, Vice-President; E. H. Brown, Superintendent and Treasurer, and George Fletcher, Secretary and Auditor. The general office is at Grass Valley.

New York Central & Hudson River.—At the annual meeting held in Albany, April 20, S. R. Callaway, President of the L. S. & M. S., and George S. Bowdoin, of New York, were elected Directors succeeding George Buell, of Rochester, and Erastus Corning, of Albany, both deceased. Mr. Callaway was also elected Director of the West Shore and the Mohawk & Malone.

Pacific Express Co.—Horace G. Burt, President of the U. P. R. R., has been elected Acting President of the Pacific Express Company, succeeding E. M. Morsman, resigned. George P. Stebbins has been appointed Acting Manager, with supervision over the business of the company.—(April 15, p. 284.)

Philadelphia & Reading.—The jurisdiction of the following officers of the P. & R. has been extended over the South Jersey, recently taken control of by the P. & R.: Daniel Jones, Comptroller; B. H. Bail, General Freight Agent; Edward J. Weeks, General Passenger Agent, and H. W. Souders, General Baggage Agent, with offices in Philadelphia, Pa. (April 15, p. 286.)

Plant System.—James Menzies, heretofore Assistant General Freight Agent at Savannah, has been appointed General Freight Agent, with headquarters at the same place.

Pullman Palace Car Co.—J. P. Leach, District Superintendent at Atlanta, Ga., has been transferred to Memphis, Tenn., and has been succeeded at Atlanta by T. E. Kinsey, heretofore District Superintendent at Galveston, Tex. The Galveston office has been abolished, and that district will hereafter be operated by the District Superintendent at St. Louis. Edward Donaldson, at present District Superintendent at Memphis, has been transferred to Richmond, Va., to succeed the late R. E. Edwards. (April 1, p. 244.)

Ripley & Mill Creek Valley.—At the annual meeting held at Ripley, W. Va., April 14, H. P. Camden and Ely Ensign were elected Directors.

Sherman, Shreveport & Southern (M., K. & T.).—At the annual meeting held in Greenville, Tex., April 6, Phil H. Roscue was elected a Director, succeeding Thomas H. King. W. A. Williams, of Greenville, Tex., was elected Vice-President, succeeding Mr. King.

Southern Pacific.—Edward Hernandez has been appointed Steamship Freight Agent of the Morgans' Louisiana & Texas Railroad and Steamship Co., with headquarters at New Orleans, La.

Tallulah Falls.—The following officers of this new company, referred to in the Railroad News column, successor to the Blue Ridge & Atlantic, have been elected: President and General Manager, George Lewis Prentiss, 31 Nassau street, New York City; Assistant General Manager and Superintendent, W. V. Lurlaine, formerly Receiver of the Blue Ridge & Atlantic, Clarksville, Ga.; Secretary and Treasurer, E. F. Street; General Counsel, King & Spaulding, with office at Atlanta, Ga.; Attorney, J. J. Bowden, of Clarksville, Ga.

Texas Central.—At a meeting of the Board of Directors held at Waco, Tex., April 13, George T. Reynolds, President of the First National Bank, Albany, Tex., was elected a Director, succeeding Col. R. B. Parrot, resigned.

Toledo & Ohio Central.—Assistant Auditor A. A. Packer has resigned to accept a position with the Cleveland Oil Co. He has been succeeded by C. E. Bennett.

Toledo, St. Louis & Kansas City.—Joseph W. Sherwood, Superintendent of the Toledo Division, has been appointed General Superintendent, succeeding Arthur L. Mills, resigned. Mr. Sherwood entered railroad service in 1864 as a telegraph operator with the Indianapolis, Cincinnati & Lafayette, now a part of the C., C., C. & St. L. He was appointed Master of Transportation of the I. C. & L. in March, 1880. He was with the Cincinnati, Indianapolis, St. Louis & Chicago, also a part of the C., C., C. & St. L., as Superintendent for a short while, and then became Superintendent of the Northern Division of the Milwaukee, Lake Shore & Western, which is now the Ashland Division of the Chicago and Northwestern, and he was appointed Superintendent of the Toledo Division of the St. Louis & Kansas City March 1, 1896.

Union Pacific, Denver & Gulf.—Thomas E. Fisher, Chief Clerk of the Passenger Department, has been promoted to succeed Benjamin J. Winchell, who resigned as General Passenger Agent, with office at Denver, to take service with the St. Louis & San Francisco. The appointment is effective May 1. (April 15, p. 284.)

Wagner Palace Car Co.—A. G. Adams has been appointed General Accountant, with office in New York, succeeding Thomas D. Boak, resigned.

Wisconsin Central.—S. G. Brown, Asistant Auditor since May, 1894, has resigned, his resignation taking effect May 1.

RAILROAD CONSTRUCTION,

Incorporations, Surveys, Etc.

ASTORIA & COLUMBIA RIVER.—The entire 60 miles of track has been laid on this line from Astoria, Ore., along the south bank of the Columbia River to Goble, on the N. P. No ballasting has been done, nor has train service been established. About 300 men are still at work. The bridges and trestles are completed. (April 1, p. 245.) J. H. Curtis, of Astoria, Ore., is Chief Engineer. (Official.)

BROOKLYN & BRIGHTON BEACH.—James Troy, appointed Referee to determine what expenditures should be made in the improvements of this property, recommends that, with the consent of the receivers, the company expend $34,500 in doing work necessary to preserve the property. This is a double-track road from Atlantic avenue, Brooklyn, to Brighton Beach—seven and one-half miles. In July, 1897, trains belonging to this company were discontinued, the Kings County Elevated trains only being run over the road. The elevated extension of Franklin avenue was leased to the Kings County Elevated in 1896. A receiver was appointed Jan. 14, 1898.—(Feb. 11, p. 119.)

CANADIAN ROADS.—The Railroad Committee of the Canadian House of Commons on April 13 accepted a bill incorporating the Miles, Manyon & Lewis River Tramway Company to build a system of tramways across Paya's Portage, between Lake Lindemann and Lake Bennett, and across White Horse and Five Finger Rapids, on the Lewis River. The line is to be operated by steam, electricity or horse power. This is apparently the same route as that proposed by the Chilkoot Railroad & Transportation Company to extend its line toward the Yukon River from its present terminus at Crater Lake. (C. R R. & T. Co., Jan. 14, p. 34.)

CHATTANOOGA, ROME & SOUTHERN.—A force of men was put at work last week at Chickamauga Park, Tenn., building a number of additional sidetracks, sheds and platforms for the accommodation of the United States troops.

CHICAGO, ROCK ISLAND & PACIFIC.—Engineers are reported to be surveying for a line for this company from Topeka, Kan., to Kansas City, Mo. The company has had trackage rights over the Union Pacific for several years from Kansas City west 67.35 miles to North Topeka.

CHICAGO, WAUKEGAN & NORTH SHORE.—Regarding this newly incorporated company, noted in this column last week, we are officially informed that a line from Waukegan to Winthrop Harbor, in the northeast corner of Illinois, has been contemplated for five years, or since 2,700 acres of land were bought by the Winthrop Harbor & Dock Company. In taking out the charter for the railroad the eventual extension of the line to Chicago and intermediate railroad connections was made possible, but that part of the road is entirely in the future, when necessity for it develops with the growth of shipping interests at Waukegon, Winthrop Harbor and other lake shore points. The ten miles of road from Winthrop Harbor to Waukegan, where it will connect with the Elgin, Joliet & Eastern, or outer belt line of Chicago, will, it is stated, be built at once, part of the right of way having already been secured. Plans for the harbor work at Winthrop Harbor have been completed and inspected and approved by the United States Engineer Officer at Milwaukee, and the necessary Government permit has been obtained. The harbor entrance will be 350 ft. wide, and the slips 150 ft. All dredging is calculated to a depth of 20 ft., and piling and docking will be made to permit further excavation in future when necessary. The harbor and factory district of the proposed town covers 700 acres lying east of the C. & N. W. Ry., and will have a railroad terminus controlled and maintained by the dock company.

CINCINNATI, GEORGETOWN & PORTSMOUTH.—The Directors have appropriated $100,000 for extending this line from Georgetown, O., southeast 23 miles to West Union, as soon as the right of way and $50,000 bonus asked for are obtained. (March 25, p. 224.)

COAST RAILWAY OF NOVA SCOTIA.—A correspondent takes exception to the official statement as to progress on this road which appeared in The Railroad Gazette of March 11 (p. 188), as follows:

(1.) Location has not been completed from Yarmouth to Lockeport, but, on the contrary, no location has been made over, or around, the mountain range west of Shelburne, locally known as the Birchtown Hills, where the engineering difficulties are very serious.

(2.) That 20 miles (in addition to the 31 miles already built) is under construction, "the work of which is well advanced," seems to be an exaggeration, but it appears to be the fact that a contract for the substructure of 20 miles has been agreed upon with H. Townsend, probably conditioned upon evidence being given of the money being secured to pay for the same.

(3.) In the "official statement," in which it was said that the charter of the Nova Scotia Southern Railway Company had expired, no mention was made of the fact that a bill was then pending in the Legislature for the extension thereof, which bill, with some amendments, was passed and received the royal assent March 11th.

(4.) That "considerable progress has been made on this line between Lockeport and Halifax" is not true, not a sod having been turned.

(5.) That "free right of way has been secured for the entire distance, including subsidies from the Government," is not true. It appears that the company applied to the County Councils of Queens and Lunenburg counties, at the January sessions, to have the right of way made a charge upon those counties, but was refused, at least for the present. As to the Government subsidies, I understand that the company has no subsidy east of Lockeport, and that its contract with the Government of Nova Scotia for a subsidy for the line from Yarmouth to Lockeport will expire on the 1st of October of this year, time being declared to be of the essence of the contract, the company having defaulted in a previous contract to complete that portion of the road in 1896 as a narrow gage road, and got a renewal of the contract for a standard gage.

The above statement was referred to L. H. Wheaton, Yarmouth, N. S., Chief Engineer of the Coast Railway of Nova Scotia, who makes the following reply:

(1.) Location has been substantially completed from Yarmouth to Lockeport. Regarding the Birchtown Hills, location was not fully completed, so far as the instrumental work was concerned, on seven miles of this district, owing to the fact that work was closed down in the latter part of November on account of bad weather, before this portion had been completed; but a preliminary line had been run, which was entirely satisfactory to this company, and sufficient cross sections were taken to project a location, which was so satisfactory that we have not since considered the matter, but will complete this location as soon as surveys are completed from Lockeport to Halifax. The profile and plan of this seven miles are on file in the Provincial Government Engineer's office, as well as my own, and I would be happy to refer your correspondent to a view of either.

(2.) The second statement is correct, for, on the 20 miles in question, 4.7 miles of grading has been completed and the masonry fully completed on 11 miles; and there are no conditions in the contract with H. J. Townsend & Co. such as mentioned in the communication. I may say in addition that Messrs. Townsend & Co. commenced active construction work on the 4th of this month, and are increasing the number of men daily on this section.

(3.) With regard to the fact that the Nova Scotia Southern Railway charter had expired, this was correct at the time. They applied for a renewal of their charter at the February session of the local legislature, but it was not granted. The charter which they did secure after our statement of March 5th was over an entirely different portion of the country, and the reasons for granting which I am not free to discuss at this time, nor do I believe are they.

(4.) On looking at the copy of statement in my letter book, I find that this should read, "considerable progress made on this line between Lockeport and Halifax," which was the statement as written, and as copied in my letter book, and which progress we fully expect to make. In the copies furnished the other railroad papers throughout the country the words "has been" do not appear, and it was not our intention to have them appear. [We made a mistake in stating as progress made what was expected.—Ed.]

(5.) Right of way has been granted us as follows: Town of Yarmouth, municipalities of Yarmouth, Argyle, Barrington, Shelburne, Queens, Chester and Halifax. In the municipality of Lunenburg, the vote was left open over a distance of 21 miles, until the route is decided upon, as we have in contemplation two different lines. In the event of the adoption of one of the two lines, nine miles of this distance would be trackage rights over the Nova Scotia Central Railway, for which no right of way has been required from the municipality.

With regard to the Government subsidy, I would refer your correspondent to the Premier of Nova Scotia.

With regard to the statement that our contract with the Government of Nova Scotia for the line from Yarmouth to Lockeport would expire on the 1st of October of this year, I beg to say that this time was extended to October, 1899, at the last session of the local Legislature.

ELIZABETHTON MINERAL. — This company was incorporated in Tennessee April 12, to build a line from Elizabethton, in Carter County, northeast about 20 miles to a point in Shady Valley, Johnson County. The incorporators are: J. N. Adams, Henry G. Adcock, R. E. Callowhill, Joseph Elliott and J. P. Elliott.

EL PASO & NORTHEASTERN.—The contract for the Alamogordo & Sacramento Mountain extension, from Alamogordo, N. M., east about 20 miles to the Sacramento Mountains, has been awarded to George S. Good & Co., of Lock Haven, Pa. (A. & S. M., April 1, p. 245.)

ERIE.—Grattan & Jennings, of Buffalo, N. Y., have obtained the contract for elevating the tracks in Jersey City, N. J. (March 11, p. 188.)

GRAND TRUNK.—About 200 miles of 80-lb. rails will be laid during the coming season, but none for new track. (Official.)

GREAT NORTHERN.—A. Guthrie & Co., of St. Paul, Minn., are reported to have received a contract for improvements in grade, bridges, etc., on the main line between Larimore, N. D., and Havre, Mont., 609 miles.

An extension is reported under consideration from Anoka, Minn., north to a connection with the Eastern Minnesota line of the road at Brook Park, about 55 miles. This would shorten the line from St. Paul to Duluth by some 25 miles.

INTERCOLONIAL.—Among the estimates for 1898 presented to the Dominion Parliament is $460,600 for improvements of the I. Ry., including extensions to Deepwater at North Sidney, N. S., $30,100, and to Montreal, $210,000; also improvements at Halifax and Mulgrave, N. S.; Moncton, N. B., and Richmond, Que.

KANSAS CITY, FORT SCOTT & MEMPHIS.—J. J. and C. D. Long, according to report, have obtained the contract for building the extension of the Kansas City, Memphis & Birmingham line of this road from Birmingham, Ala., north about seven miles to Camak's Mill. Surveys were begun about a week ago.

KANSAS CITY, OSCEOLA & SOUTHERN.—Grading is reported completed on the extension from Osceola, Mo., southeast 40 miles to Bolivar. Recent rains have delayed the work. George S. Good & Co., of Lock Haven, Pa., have the general contract. (Jan. 14, p. 34.)

KANSAS, OKLAHOMA, CENTRAL & SOUTHWESTERN.—The Toledo Construction Co., of Toledo, O., is reported to have received a contract for building 350 miles of this company's line from Coffeyville, Kan., southwest to Vernon, Tex., and work is to begin at once. The company was incorporated in 1894, and obtained a concession from Congress to build its line through the Indian Reservations in Indian and Oklahoma Territories. In January, 1897, the time was extended two years, with the proviso that the first 300 miles must be built before Dec. 9, 1898. J. H. Bartles, of Bartlesville, I. T., is President.—(Nov. 29, 1894, p. 813; Dec. 10, 1897, p. 878.)

MANSFIELD SHORT LINE.—The right of way in Mansfield, O., has been permanently accepted, and the Directors have appropriated $15,000 to buy the right of way from Shelby to Mansfield. The road as projected is to run from Shelby, O., southwest via Mansfield to Lucas, about 30 miles, and the Crouch Construction Company, of Chicago, has the contract. C. W. French, of Mansfield, O., is President. (March 25, p. 224.)

MISCELLANEOUS COMPANIES.—The New Mexico Development Company was incorporated in New Mexico April 16, with a capital stock of $500,000, to build railroads, operate mines and do a general business, particularly in the Pecos Valley. It is organized under the laws of West Virginia. W. A. Hawkins, with headquarters at Almagorda, is Agent for New Mexico.

Hale & Smith.—This company was incorporated in Oregon April 6, with a capital stock of $10,000, to build railroads, canals, bridges, etc., in Oregon, Washington and Idaho. The incorporators are: John Hale, J. H. Smith and H. B. Dickson.

MONTEREY & FRESNO.—The Board of Trustees of the city of Monterey, Cal., by unanimous vote, has renewed the right of way of this company through the city until Jan. 1, 1900. The proposed line is from San Jose, Cal., southeast about 40 miles through Monterey to San Juan; thence east through the Panoche Pass in the Coast Range Mountains to Fresno, a total of 160 miles. H. A. Greene, of Monterey, Cal., is Vice-President and General Manager.

MOUNT PENN GRAVITY.—The improvements on this road consists of the addition of the trolley. The line will be run by steam when travel is heavy, and by trolley when the traffic is ordinary. The road extends from Mineral Park Station, Pa., to the summit of and around Mount Penn, 8 miles. (Apr. 15, p. 285.)

NEW COMPANIES.—The Police Jury, at its meeting at Donaldsonville, La., April 13, authorized the McCall Plant & Manufacturing Company to build a narrow-gage railroad from McCall, on the S. Ry., south through Ascension Parish to the north line of

Assumption Parish. The enterprise is in the interest of small sugar-cane growers.

William R. Herr, of Lock Haven, Pa., has been awarded a contract for building three miles of railroad for the Medix Lumber Company from the Medix Run Railroad, at Medix Run, Pa. The M. R. R. R. extends from Medix Run to Orchard Station, eight miles. George S. Dodge, of New York City, is President.

NORTHERN PACIFIC.—Official confirmation is received that Wren & Greenough have received contract for bank widening and grade revisions on the track between Cheney, Wash., and North Yakima. (April 8, p. 266.)

PECOS VALLEY.—Malory & Co., of Chicago, are reported to have received the contract for building the extension from Roswell, N. M., northeast 206 miles to Amarillo. (April 1, p. 246.)

PENNSYLVANIA.—Acting under orders received from the United States Government, building was begun April 14 on 1½ miles of track to connect the Delaware, Maryland & Virginia with the Government iron pier at Lewes, Del.

PORT ARTHUR, DULUTH.—This company, according to report, will build a branch road from Port Arthur, Ont., to Kakabeka Falls.

ROCK ISLAND, SWEETWATER & SOUTHWESTERN.—This company is being organized in Texas to build a road from Graham southwest via Anason, Sweetwater and Sterling to Sherwood; thence south through Schleicher, Sutton, Edwards and Kinney Counties to Spofford Junction, on the S. P. The general office is at Sweetwater. It is stated that Sweetwater and Anason have each guaranteed a bonus of $30,000.

SAN FRANCISCO & SAN JOAQUIN VALLEY.—The line has been completed to the Kern River and construction trains are bringing material to the bridge, where work is in progress. Grading on the Bakersfield side of the river is completed and tracklaying begun. The road, when completed, will extend to Bakersfield. (Feb. 4, p. 88.)

SHREVEPORT & RED RIVER VALLEY.—The first train ran over the new line from Shreveport, La., to Loggy Bayou, April 14. When completed, the road will extend from Shreveport south 43 miles to Coushatta. (Jan. 21, p. 51.)

SPOKANE FALLS & NORTHERN.—The announcement that the Dominion Parliament has granted the charter for the extension down the Kettle River from Greenwood City to the International boundary was premature. (April 8, p. 266.) The Dominion House on April 15 decided against the bill by a vote of 64 to 44.

TACOMA & COLUMBIA RIVER.—The Common Council at Tacoma, Wash., has granted the right of way for the proposed extension within the city. The franchise is for 25 years, but the work must commence within four months and be completed within two years. (March 11, p. 189.)

UNION PACIFIC.—Kyne & Owen, of Norfolk, Neb., are reported to have obtained a contract for track betterment from Grand Isle, Neb., west 78 miles to Lexington.

WESTERN & MEXICAN.—The company is building slowly its extension from Culiacan, Mex., east toward the mountains. Location has been made as far as Tanazula, and grading has been completed for about five km. (three miles).—(March 11, p. 189.) G. R. Douglas, of Mazatalan, Mex., is General Manager. (Official.)

Electric Railroad Construction.

ALLIANCE, O.—An ordinance was passed in the city council authorizing the Stark Electric Railway to build its road in the west end.

BALTIMORE, Md.—Press reports state that the new owners of the Columbia & Maryland Electric Railroad have let a contract for completing the road to J. G. White & Co. The road will be completed to Ellicott City, and it is planned to build an extension to Laurel. (April 1, p. 248.)

CHICAGO.—Work was commenced April 11 on the Cicero & Harlem extension of the Lake Street Elevated at Fifty-second street, just west of the present terminus, with a small force of men, which it is expected will be increased rapidly. The time limit for the completion of the extension is Sept. 15, but a delay of sixty days in the delivery of the iron work is expected, which may make it necessary to ask for an extension of time from the town board of Cicero. (Feb. 25, p. 149.)

CLEVELAND, O.—The Cleveland & Chagrin Falls Electric Railroad Company will build an extension this summer as far as Burton, via Fullerton, about 15 miles.

The Pennsylvania & Ohio Railway Company was granted a 50-year franchise by the Commissioners of Ashtabula County to build an electric railroad from Conneaut westward through Kingville, Ashtabula, Saybrook and Geneva. At Geneva connection will be made with the extension of the Cleveland, Painesville & Eastern. (April 1, p. 246.)

CONCORD, N. H.—The Concord Street Railway Co. will make a number of improvements and extensions.

JACKSON, MO.—Press reports state that the Council has granted a franchise to Mr. S. T. Carnes of Memphis, to build an electric railroad.

JONESBORO, Ark.—W. O. Bunce is interested in a proposed street railroad to be built from Jonesboro to Nettleton, four miles.

LIMA, N. Y.—The Lima & Honeoye Falls Railroad Co. has let the contract for building the road to Crage & Tench, 139 Main street, Buffalo, N. Y. (Feb. 11, p. 111.)

LIMA, O.—The Lima Railway Co. has applied to the city council for authority to double track a large part of its road. The company also contemplates making extensions of single track.

LITTLE ROCK, ARK.—The Army Post Electric Street Railway Company has been incorporated to build an electric road three and one-half miles long. The officers are: D. I. Gilson, St. Louis, President; Andrew F. Brown, St. Louis, Vice-President; R. F. Sojourner, Little Rock, Secretary.

MILWAUKEE, WIS.—Mr. A. C. Frost, of A. C. Frost & Co., 108 La Salle St., Chicago, informs us concerning the franchise which he was attempting to get from the city council of Milwaukee, that for the present, and at least until the newly elected council is organized and ready to consider a proposition, the matter has been abandoned.

It is stated that the Springfield & Southwestern Street Railway Co. was incorporated with a capital stock of $300,000, by Jesse W. Starr and associates.

MONTICELLO, IND.—Work will be commenced within a few weeks on the electric railroad from Monticello to Fowler, 35 miles. Wm. Sear, Chicago, is President; A. C. Matchett, Burbon, Ind., Vice-President; Frank M. Gilmore, Chicago, General Manager. The road will be built largely on private right of way.

NEVADA, MO.—Press reports state that a trolley road will be built in Nevada and other points in Vernon County, by Messrs. C. N. Hammond & Co., of Kansas City.

NEW BRUNSWICK, N. J.—The Syndicate Construction Co. was recently incorporated with a capital of $50,000 to build and operate electric railroads in Union, Somerset, Middlesex, Mercer, Burlington and Camden counties. The incorporators are Gottfried Kruger and Andrew Radel of Newark, and Edward H. Radel of New Brunswick, all at present officers of the Brunswick Traction Co.

It is stated that the Brunswick Traction Co. has come to an agreement with the council of Somerville and will at once commence building an extension through the town.

NEW HAVEN, CONN.—The New York, New Haven & Hartford, press reports state, is likely to perfect plans for electrifying within a short time the Berkshire Division, between New Haven and Derby, a distance of about 10 miles.

OAKLAND, CAL.—An ordinance was passed granting the Oakland Consolidated Street Railway Co. right of way in several more streets.

PEEKSKILL, N. Y.—The Peekskill Traction Co., was recently incorporated to build and operate an electric railroad in Peekskill, Cortlandt and Yorktown, in all about 12 miles. The capital stock is $150,000, divided into 1,500 shares of $100 each. The Directors are Dr. Charles Mason, James H. Haight, Frank Frye, Charles N. Wells, J. R. Decatur, Matthew Clune, James F. Martin, Hanford Smith of Peekskill and Jacob Larsch of New York City.

QUINCY, ILL.—J. C. Hubinger of Keokuk, Ill., was granted a franchise by the Council to build an electric railroad in Quincy. (Jan. 14, p. 35.)

SHELTON, CONN.—The Shelton Street Railway Company has completed surveys for an extension southward, and most of the right of way has been secured between Shelton and Stratford, where connection will be made with the Bridgeport Traction Company's lines.

SPRINGFIELD, MASS.—The Springfield Street Railway Co. has petitioned the railroad commissioners for authority to issue $300,000 additional capital stock to be used in making improvements and extensions. (Jan. 7, p. 17.)

SYRACUSE, N. Y.—The Syracuse Rapid Transit Railway Co. has broken ground for the Fourteenth ward belt line. In a few days work will be begun on an extension of the Midland avenue line.

UTICA, N. Y.—The Utica Belt Line Railway Company will build an extension to accommodate the Eureka mower works district.

VENICE, ILL.—The Venice, Madison & Granite City Railway will build an extension to Horseshoe Lake.

WHITEHALL, N. Y.—Concerning the proposed electric railroad from Whitehall to Granville we are informed that these gentlemen are interested: H. G. Burleigh, 1 Broadway, New York, and Whitehall; R. M. Wetherbee, Whitehall; C. I. Baker, Troy; W. D. Hughes, Granville. A company has not yet been organized.

WOONSOCKET, R. I.—Arnold B. Chace was chosen President and Cyrus Taft Clerk of the Cumberland Railway Co., organized to build an electric railroad from Woonsocket to Pawtucket. Thomas A. Jenckes of Providence is also interested. (April 1, p. 247.)

GENERAL RAILROAD NEWS.

ALLEGHENY & KINZUA.—This road has ceased operations and the Receiver is preparing to advertise the property for sale. (Oct. 1, 1897, p. 697.) The date and terms are not yet fixed. F. W. Kruse, Olean, N. Y., is Receiver. (Official.)

ATCHISON, TOPEKA & SANTA FE.—The Gulf, Colorado & Santa Fe line has completed negotiations for the section of the Fort Worth & Denver City from Panhandle City, Tex., southwest 15.1 miles to Washburn, and formal possession was taken April 20.—(April 15, p. 286.)

BLUE RIDGE & ATLANTIC.—W. V. Lurlaine, Receiver, turned over the property of this company on April 1 to its recently incorporated successor, the Tallulah Falls Railway Co. The road was sold Sept. 27, 1897. A receiver was appointed March 14, 1892. The line extends from Cornelia, Ga., to Tallulah Falls, 20.9 miles. The new officers are given under Elections & Appointments. (March 18, p. 209.)

CENTRAL VERMONT.—With reference to the agreement between the C. V. and the Grand Trunk companies, referred to last week, the full text shows that the G. T. Co., because of certain valuable considerations, agrees to pay to the Baker Committee of the C. V., at the American Loan & Trust Co., Boston, for not exceeding one year from Feb. 1, 1898, the interest that would have been payable on account of so many of the first mortgage bonds and second mortgage bonds, Series A, as the holders of certificates assenting to this agreement would have been entitled to if such first and second mortgage bonds had been issued, the interest to be payable on the 1st of May, August, November and February, respectively. The Baker Committee, in consideration of this agreement by the G. T., agrees to hold the three coupons for interest payable Jan. 1 and July 1, 1897, and Jan. 1, 1898, on account of 5 p. c. mortgage bonds of the Consolidated R. Co. for securing to the G. T. the repayment of the sum so advanced in case the proposition shall for some reason fail to be carried ultimately into effect. This agreement is dated Feb. 1, 1898.

CHICAGO, ROCK ISLAND & PACIFIC.—Holders of 5 p. c. 30-year debenture bonds due 1921 and 5 p. c. mortgage extension and collateral bonds are notified that after April 25 the Central Trust Co. of New York is prepared to deliver in exchange the new 4 p. c. general mortgage 90-year gold bonds, and to make cash payments of $18.33 on each of the extension and collateral bonds and $13.33 on the debenture bonds. This is in accordance with the refunding plan agreed to Feb. 15. (Feb. 4, p. 90.)

CUMBERLAND & OHIO.—The Louisville & Nashville has filed an appeal to the judgment of the Law & Equity Court at Louisville, Ky., for $77,784 for deferred interest on the $250,000 of 7 p. c. bonds on the Northern Division of the C. & O., now known as the Shelbyville & Bloomfield, recently sold to the Southern Ry. (April 15, p. 286.)

ERIE.—Pursuant to its policy of acquiring the New York, Susquehanna & Western, the Erie has bought 83,996 shares of preferred stock and 100,246 shares of common stock, and has issued in exchange 98,714 shares of Erie common stock. For shares already obtained the Erie Co. must issue about 3,500 shares additional of its own preferred stock and 1,500 shares of its own common stock. The Erie Co. is offering $90 of Erie first preferred for $100 of N. Y., S. & W. preferred and one share of Erie common for one share of N. Y., S. & W. common. (April 1, p. 247.)

FLOVILLA & INDIAN SPRINGS.—This company was incorporated in Georgia April 12, with a capital stock of $10,000, as successor to the Indian Springs & Flovilla, sold at Jackson, Ga., April 5, for $2,500. The road runs from Flovilla, on the S. Ry., west 3 miles to Indian Springs. April 15, p. 286.)

HOUSTON BELT & MAGNOLIA PARK.—Frank Andrews, Master Commissioner, will sell this road at auction at Houston, Tex., at 10 a. m., May 3. Bidders will be required to deposit certified checks of $1,000. The road extends from Houston, Tex., to Brady, 4.7 miles. It was chartered April 2, 1889, and completed in 1890. It is a belt line connecting the railroads of Houston with Deep Water and Constitution Bend. It has been operated under contract by the Galveston, La Porte & Houston, which went into the hands of a receiver Jan. 7, 1895. A receiver was appointed for the H. B. & M. P. in 1891, and the road was reported sold under foreclosure in 1896 for $10,000 to M. Young, Chicago, Ill.

LITTLE ROCK & MEMPHIS.—The foreclosure sale, which was to have been held at Little Rock April 18, has been postponed until May 18. This is said to be the tenth postponement. The line extends from Little Rock, Ark., to Memphis, Tenn., 135 miles. It went into the hands of a receiver June 1, 1893.—(March 11, p. 190.)

LONG ISLAND.—Holders of $1,121,000 first mortgage 7 p. c. bonds due May 1, 1898, are notified that the principal and coupons of May 1 will be paid in cash on and after that date at the office of the United States Mortgage & Trust Co. To provide for this payment the company has sold to Brown Bros. & Co. consolidated mortgage 4 p. c. bonds to an equal amount. The total authorized issue of these bonds is $5,000,000, of which $3,600,000 have been issued at 5 p. c. The new loan will increase the amount outstanding to $4,731,000.

MEMPHIS & CHARLESTON.—The Guaranty Trust Co. of New York is prepared to issue new certificates in exchange for the certificates issued under the plan and agreement for reorganization of the M. & C., dated March 5, 1896. The new coupon bonds are in denomination of $1,000 each, and holders entitled to fractions of a bond or of a share may either sell such fractions to the Trust Co. or may buy such amounts as may be necessary to entitle them to one whole bond or one whole share. This road was sold Feb. 26, and the new company of the same name was incorporated in March. It now forms a part of the Southern Ry. (March 18, p. 210.)

MEXICAN NATIONAL.—Holders of 6 per cent. 40-year first mortgage prior lien bonds ($12,500,000 outstanding) are notified that 106 of these, amounting to $106,000, have been drawn for payment at par in accordance with the conditions of the mortgage, at the agency of the company in New York, or at the counting house of Matheson & Co., London. This is understood to be in line with an effort to refund the debt.

MICHIGAN CENTRAL.—The Guaranty Trust Co. of New York is prepared to receive deposits of shares at its office on or before June 16 in accordance with the circular of April 13 issued by the New York Central & Hudson River, which provides for the absorption of the M. C. by that company on the basis of $100 of M. C. stock for $115 in new 3½ p. c. bonds of the N. Y. C. & H. R. The new mortgage to cover this issue of bonds is for $21,550,000. The M. C. owns and controls 1,642.37 miles of road, which, with the old N. Y. & H. R. and the Lake Shore & Michigan Southern, now being absorbed, will give the N. Y. C. a total of 5,717.20 miles. (April 1, p. 248.)

NASHVILLE, TELLICO & CHARLESTON.—This road was sold at Madisonville, Tenn., April 12. It extends from Athens, Tenn., to Tellico Plains, 23 miles, and is the successor to the Nashville & Tellico. (March 11, p. 190.)

NEW YORK, PHILADELPHIA & NORFOLK.—The various interests have agreed upon a plan of reorganization whose essential conditions are as follows: Overdue coupons of the first lien 6 p. c. gold bonds to the amount of $1,005,330 are now held by the Pennsylvania R. R. Co. and the Philadelphia, Wilmington & Baltimore, the same having been bought by them from time to time under the terms of the traffic contract dated Sept. 26, 1883. These coupons matured on or before Jan. 21, 1895. All coupons since that time have been paid at maturity. On Sept. 26, 1898, these companies will be entitled to proceed legally to collect the over-due coupons for which they have demanded payment.

In view of the inability of the N. Y., P. & N. to pay the matured coupons, a foreclosure of its first mortgage and a reorganization become inevitable. This reorganization will require the raising of cash to meet expenses, and an additional fund of about $550,000 to secure the ownership in fee simple of wharves and other terminal property at Norfolk and for the purchase of an additional passenger and freight steamer. By the plan of reorganization after foreclosure, a new company will be organized under the laws of Maryland or Virginia, or of both, which shall issue capital stock for $2,000,000 to be exchanged at par for old capital stock ($1,714,375 outstanding) with an assessment of 15 p. c.; also a new first mortgage for $3,000,000 to cover all the property of the company to secure 4 p. c. 40-year gold bonds, of which $2,032,800 is to be exchanged for the $1,848,000 old first lien 6 p. c. at par and 10 p. c bonus; and $467,200 of the new mortgage to be paid to the P. RR. Co. and the P., W. & B. in part settlement of the over-due coupons. This leaves $500,000 of the first mortgage bonds to be issued for betterments. The new company will also issue a second mortgage covering the same property as the first mortgage to secure 4 p. c. noncumulative bonds of $10,000,000. These are to be issued upon payment of an assessment of 35 p. c. in exchange for the present $1,000,000 income bonds. The N. Y., P. & N. extends from Delmar, Del., to Cape Charles, Va., 95 miles, with a branch from King's Creek, Md., to Crisfield, 17 miles, making a total of 112 miles. The company also operated 36 miles of ferry between Cape Charles, Old Point Comfort, Portsmouth and Norfolk. It had a traffic contract until January, 1895, with the P. RR. under which the latter set aside 10 p. c. of the gross earnings from interchange traffic to buy first mortgage coupons. This contract was not renewed at its expiration.

NORTH CAROLINA.—The United States Circuit Court at Charleston, S. C., has entered a final decree confirming the validity of the 99-year lease of this road to the Richmond & Danville line of the Southern. This road was leased Sept. 11, 1871, to the R. & D., which lease would have terminated on Sept. 12, 1901. Accordingly, on Aug. 16, 1895, a new lease was executed for 99 years from Jan. 1, 1896, and the old lease annulled after that date. The rental under the new lease is $266,000 per annum to Dec. 31, 1901, and $286,000 per annum thereafter. The R. & D. also agrees to pay all the taxes upon the property. The N. C. extends from Goldsboro, N. C., to Charlotte, 232.2 miles.

PARIS, MARSHALL & SABINE PASS.—All litigation against this company has been settled and the new company, the Texas Southern, has been in possession for some weeks. The T. S. was incorporated March 12, 1897, to include the old line which extends from Marshall, Tex., to Eagle Creek, 23 miles, and new lines embracing in all about 300 miles, from Red River, near Paris, in Lamar County, Tex., via Lamar, Red River, Delta, Hopkins, Franklin, Camp, Wood, Upshur, Gregg and Harrison counties. Work will begin on extensions "when the war is over." J. W. Harle of Marshall, Tex., is General Manager. (March 19, p. 213.)

PHILADELPHIA, READING & NEW ENGLAND.—More than a majority of the first mortgage bonds have been deposited with the Fidelity Insurance, Trust & Safe Deposit Co., of Philadelphia, under the Fletcher reorganization plan of March 14. The time for making deposits without penalty has been extended to April 30. (March 18, p. 210.)

The penalty after April 30 will be 5 p. c. on the first mortgage bonds, 2 p. c. on Series A and Series B income bonds, and 50 cents per share on the common and preferred stock.

PITTSBURGH & WESTERN.—Thomas M. King, Receiver, has negotiated a sale of $550,000 car trust certificates with the Finance Committee of Philadelphia. The issue was made under an order of the United States Court of the Western District of Pennsylvania, and is secured on four locomotives and 750 cars.

WISCONSIN CENTRAL.—In the petition of Mark T. Cox, of Morristown, N. J., against this company the receivers are ordered to file answer within 20 days. The Court has overruled the demurrer recently filed by the W. C. (March 18, p. 210; April 1, p. 248.)

ST. LOUIS & SAN FRANCISCO.—Fifteen first mortgage 6 p. c. bonds of the Fort Smith & Van Buren Bridge Co. have been drawn for the sinking fund to be paid at the office of the Mercantile Trust Co., New York, Oct. 1, at 105, after which date interest will cease.

ST. LOUIS, VANDALIA & TERRE HAUTE.—The second mortgage 7 p. c. bonds maturing May 1, 1898 ($2,600,000 outstanding), will be paid, principal and interest, at maturity, by the Central Trust Co. of New York. (March 25, p. 226.)

ST. PAUL & DULUTH.—At a special meeting of the stockholders held at St. Paul, April 14, it was agreed by a large majority to issue a new consolidated mortgage for $5,000,000 at a rate not to exceed 5 p. c., to cover practically all the property of the company. Of the proceeds, $3,000,000 is to be reserved for retiring and maturing the $1,000,000 first mortgage 5 p. c. and the $2,000,000 second mortgage 5 p. c. bonds, and the remaining $2,000,000 will be used to retire branch line bonds and for new equipments, reduction of grades and other improvements. (Feb. 11, p. 112.)

SOUTHERN.—For acquiring the Memphis & Charleston (see above) the S. Ry. has issued a first mortgage to secure $8,000,000, of which $5,083,000 is to be used immediately and the remainder to be used for subsequent improvements. These bonds will bear 4 p. c. until July 1, 1901, 4½ p. c. until July 1, 1906, and thereafter 5 p. c. The S. Ry. has also issued $2,500,000 5 p. c. second mortgage bonds, of which $1,500,000 will be used to reimburse the S. for expenditues in connection with the purchase of the M. & C. property, the balance to be used for improvements not to exceed $100,000 yearly. The earnings of the M. & C. will not be included in the monthly reports of the S. until after July 1.

SOUTHERN PACIFIC.—The Southern Pacific of California will absorb the Northern Railway Co., 389.74 miles, the California Pacific, 113.51 miles, and the Northern California, 53.72 miles, which, with the 1,725.27 miles of the original company, will give the S. P. of Cal. 2,282.24 miles. It is understood that the capital stock is not to be increased beyond the present aggregate capital of the four companies. The S. P. Co. owns $68,855,050 of the $70,006,100 capital stock of the S. P. of Cal., and has a lease on that road on an agreed basis of a division of net profits.

UNION PACIFIC.—Judge Sanborn, at Topeka, Kan., on April 14 issued an order discharging the receivers of the Solomon RR. and the Salina & Southwestern, both branches of the U. P., and directing that their affairs be turned over to the owners of the respective roads. These companies went into the hands of the U. P. receivers Oct. 13, 1893. The Solomon extends from Solomon, Kan., to Beloit, 57.04 miles. It was opened for business Jan. 29, 1878, and has been operated by the U. P., which supplies equipment. The Salina & Southwestern runs from Salina, Kan., to McPherson, 35.47 miles. It was opened July 3, 1879, and consolidated Dec. 21, 1880, without change of name, with the Kansas & Southwestern. The U. P. owns $233,700 of the $288,400 capital stock. The bonds of both companies are held in the Kansas Pacific Consolidated Mortgage Trust.

UNION PACIFIC, DENVER & GULF.—Receiver Trumbull makes the following statement as to the reorganization of this road:

Old accounts between the Union Pacific R. Co. and the U. P., D. & G. R'y Co., involving between four and five million dollars, were settled absolutely, and settlement has been approved by the United States Courts at St. Paul and Denver.

Julesburg division sold to U. P.; title to be given at time Gulf receivership is wound up, which I hope will be about Oct. 1.

Contract made with Colorado & Northwestern R'y Co. for facilities and exchange of business at Boulder.

U. P., D. & G. syndicate has secured $2,700,000 Colorado Central 7 p. c. bonds, formerly owned by U. P. interests, and this gives Gulf syndicate control of Colorado Central situation.

Trackage contract made with Denver & Rio Grande for line between Pueblo and Walsenburg for a term of years beyond the receivership on mutually satisfactory basis.

An understanding was arrived at between the U. P., D. & G. consolidated bondholders and committee of the underlying bonds on lines south of Denver, viz., of the old Denver, Texas & Gulf and Denver, Texas & Fort Worth mortgages, of which about $1,750,000 are still afloat. With this understanding, and with control of the Colorado Central situation, it is expected the new company can retire all the underlying bonds and put out a new bond which will be a first lien upon all lines from Greeley via Fort Collins to Texline; also branches, including the Central City and Silver Plume divisions and the Cheyenne & Northern Division in Wyoming.

In case there is no war, the general reorganization committee will probably promulgate a plan about the first of May. The reorganization, as heretofore stated, will be entirely independent, and headquarters of the road will be in Denver. No intimations will be given as to the official roster until the new company is ready to take possession.

WILLIAMSPORT & NORTH BRANCH.—The heirs of the Satterfield estate, large owners of this company, have agreed to a sale of the road at a price said to be $450,000. The case is now in the hands of Surrogate Marcus, of Buffalo, N. Y. This line extends from Hall's, Pa., to Satterfield, 44.4 miles, with a branch from Birch Creek to Bernice, .6 of a mile. It is successor to the Muncy Creek R. R., sold under foreclosure Aug. 9, 1882. The capital stock is $925,362 common and $300,000 preferred. The funded debt consists of $1,125,000 first mortgage 5 p. c. 30-year coupon bonds, due Sept. 1, 1922.

Electric Railroad News.

BROOKLYN, N. Y.—A temporary injunction has been granted restraining the Kings County Traction Company from parting with any assets of the Traction Company, or with the right, title and interest of the Traction Company in the capital stock of the Atlantic Avenue Railroad Company. The proceedings were begun by Crowell Hadden, a shareholder of the Traction Company. (March 25, April 15; pp. 226, 286.)

COLUMBUS, GA.—The Commercial & Financial Chronicle reports that the old bondholders of the Columbus Railroad Co. have assented to a plan of reorganization whereby they are to receive new first mortgage bonds for 61 per cent. of their holdings, and new second mortgage incomes for the balance. The new firsts will be forty-year 5 per cents., and will cover the combined property of the Columbus R. R. North Highlands R. R., and the Brush Electric Light & Power Co. The authorized issue will be $450,000, of which $30,000 will be held in treasury to retire an underlying lien of $30,000, maturing in 1913, and $20,000 of the new bonds are reserved to build a bridge. The issue of second mortgage 6 per cent. noncumulative income bonds is for $250,000. The balance of both of the new issues not used as above goes for the acquisition of the Brush Electric Light & Power Co.

COLUMBUS, O.—Emerson McMillin of New York has resigned the Presidency of the Columbus Street Railway Company. Robert E. Sheldon of Columbus succeeds him, and Clarence M. Clark of Philadelphia succeeds Mr. Sheldon as Vice-President.

CONWAY, MASS.—The Conway Electric Street Railway Co. has petitioned the Railroad Commissioners for authority to issue additional capital stock amounting to $17,000 and first mortgage bonds amounting to $10,000.

FALL RIVER, MASS.—The Railroad Commissioners have approved the issue of $50,000 worth of additional capital stock of the Globe Street Railway Co., the proceeds to be used in acquiring the franchise and property of the Fall River Street Railway Co. The 500 additional shares to be issued by the Globe Company will be exchanged share for share of the outstanding capital stock of the Fall River Company. The Fall River Street Railway Co. was organized in 1895 with a capital stock of $50,000, and operates about 3 miles of track. (Mar. 25, p. 226.)

LOWELL, MASS.—The Railroad Commissioners have approved the acquisition of the People's Electric Street Railway of Amesbury by the Lowell, Lawrence & Haverhill Street Railway Company. The board has also approved the issue of 5 per cent. first mortgage bonds, amounting to $65,000, to retire the outstanding capital stock of the People's Company, on the basis of one bond for 10 shares of the stock.

MOUNT VERNON, N. Y.—The North Mount Vernon Railroad was sold at auction April 16 under foreclosure proceedings. The railroad, which is about two miles long and runs from the Harlem Railroad station to Barke's Corners, using horses, was bought in for the bondholders by the People's Bank of Mount Vernon for $15,000.

NEWARK, N. J.—The following statement shows the earnings of the Consolidated Traction Company of New Jersey:

Gross earnings for March, 1898	$248,719
Operating expenses	125,158
Net earnings	$123,561
Fixed charges, interest and taxes apportioned	115,471
Surplus	$8,,090
For the three months ending March 31, 1898, the surplus was	$3,978
For the corresponding period of 1897 the deficit was	$16,180

TRAFFIC.

Traffic Notes.

Contracts for the transportation of troops of the Department of the East have been made as follows:

In the four days ending with Easter the railroads from Philadelphia landed 25,000 passengers in Atlantic City.

At Pittsburgh, Pa., last week a produce shipper from Michigan was fined $25 for selling goods in a railroad yard.

San Francisco dispatches have lately reported large shipments of flour, leather and other goods to Vladivostock. Among other things were 19 carloads of canned meats and other provisions from Kansas City.

The Attorney General of Texas has entered eight suits against the Gulf, Colorado & Santa Fe for making secret reductions in freight rates, contrary to the law of Texas. It will be remembered that large fines for offenses of this kind were paid in Texas by one or more railroads a few months ago.

The $10 passenger fare between the Missouri River and the North Pacific coast points is still in effect. Western newspapers report that at present the eastward travel on these tickets is heavier than the westward. The number of passengers going North from Puget Sound by water has fallen off so seriously that fares have been greatly reduced. From Vancouver to Skaguay the rate last Saturday was $25, and still falling.

Four hundred and fifty officers and men from Sacketts Harbor to Tampa, by West Shore, $27.72 per capita; 450 officers and men from Plattsburg to Tampa, West Shore, $27.18 per capita; 50 men from Fort Niagara, who will march from Fort Porter, where 250 officers and men are to be transferred to Tampa, New York, Chicago & St. Louis, $26.35; 230 officers and men and 230 horses and a number of freight wagons from Fort Ethan Allen to Chickamauga, West Shore, $24.12; light battery from Fort Adams, Newport, R. I., 3 officers and 70 men, 50 horses, 4 guns and caissons on battery wagon, and equipages, to be shipped by the old Colony Steamboat Co. to New York at a total cost of $146. From New York to Chickamauga the battery will travel over the Pennsylvania at a cost of $16.04 per capita. Light battery from Fort Hamilton to Chickamauga, Baltimore & Ohio, $17.85. One hundred and fifty men from Governor's Island to Tampa, Pennsylvania Railroad, $20.88.

Chicago Traffic Matters.

Chicago, April 20, 1898.

Grain rates eastbound out of Chicago are badly demoralized, but the shading of rates does not prevent the lake lines getting the lion's share of the business.

In order to avoid prosecution by the Chicago Live Stock Exchange some of the Missouri River lines have decided to reduce the rates on cattle and hogs to 13 cents per 100 lbs. from Missouri River points to this city.

The Alaska passenger rate situation is unchanged, no good coming out of the many conferences held lately. The Canadian Pacific refuses to withdraw its request for differentials.

Chicago-St. Paul lines have taken radical action to prevent the demoralization of their business by the warfare with the Canadian Pacific. Hereafter all through eastbound tickets from St. Paul and Minneapolis via Chicago will be made descriptive, and good only for continuos passage with no stop-over in Chicago.

Freight rates on exhibits to the Omaha Exposition have been fixed by the Western lines. Materials for construction, full rates. Exhibits, tariff rates when carried to the Exposition; returned unsold within 30 days after the close of the Exposition, free, at owner s risk. Horses and mules and other animals (except cattle, hogs and sheep) will be charged tariff rates in both directions. The Missouri Pacific is the only railroad connecting with the tracks of the Exposition, and the charge for switching carloads will be $2 per car. The Exposition Company will impose the following charges: For switching construction material, $4 per car; for handling exhibits, 6 cents per 100 lbs.

Eastbound shipments, exclusive of live stock, from Chicago and Chicago junctions to points at and beyond the western termini of the Trunk Lines for the week ending April 14 amounted to 94,533 tons, as compared with 97,897 tons the preceding week. This statement includes 36,716 tons of grain, 7,454 tons of flour and 12,392 tons of provisions. The following table shows the quantities and proportions carried by the respective roads:

	Week Ending April 14.		Week Ending April 7.	
Roads.	Tons.	P. C.	Tons.	P. C.
Baltimore & Ohio	13,236	14.0	11,267	11.5
C., C., C. & St. L.	4,124	4.4	3,640	3.7
Erie	13,488	14.3	11,686	11.9
Grand Trunk	8,371	8.9	4,866	5.0
L. S. & M. S.	14,487	15.3	23,813	24.3
Michigan Central	11,193	11.8	13,071	13.4
N. Y., C., & St. L.	5,141	5.4	10,543	10.8
P., C., C. & St. L.	5,648	6.0	5,350	5.5
Pitts., Ft. Wayne & Chi.	11,819	12.5	11,293	11.5
Wabash	7,026	7.4	2,368	2.4
Totals	94,533	100.0	97,897	100.0

Lake shipments last week amounted to 188,833 tons.